Cisco Wireless IP Phone 7920 Administration Guide for Cisco CallManager Release 3.3 or later

Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
http://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

Text Part Number: OL-3930-02

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The following information is for FCC compliance of Class A devices: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

The following information is for FCC compliance of Class B devices: The equipment described in this manual generates and may radiate radio-frequency energy. If it is not installed in accordance with Cisco's installation instructions, it may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in part 15 of the FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

Modifying the equipment without Cisco's written authorization may result in the equipment no longer complying with FCC requirements for Class A or Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

You can determine whether your equipment is causing interference by turning it off. If the interference stops, it was probably caused by the Cisco equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

• Turn the television or radio antenna until the interference stops.

• Move the equipment to one side or the other of the television or radio.

• Move the equipment farther away from the television or radio.

• Plug the equipment into an outlet that is on a different circuit from the television or radio. (That is, make certain the equipment and the television or radio are on circuits controlled by different circuit breakers or fuses.)

Modifications to this product not authorized by Cisco Systems, Inc. could void the FCC approval and negate your authority to operate the product.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

CCSP, the Cisco Square Bridge logo, Cisco Unity, Follow Me Browsing, FormShare, and StackWise are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn, and iQuick Study are service marks of Cisco Systems, Inc.; and Aironet, ASIST, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Empowering the Internet Generation, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, GigaDrive, GigaStack, HomeLink, Internet Quotient, IOS, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, LightStream, Linksys, MeetingPlace, MGX, the Networkers logo, Networking Academy, Network Registrar, *Packet*, PIX, Post-Routing, Pre-Routing, ProConnect, RateMUX, Registrar, ScriptShare, SlideCast, SMARTnet, StrataView Plus, SwitchProbe, TeleRouter, The Fastest Way to Increase Your Internet Quotient, TransPath, and VCO are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0406R)

Cisco Wireless IP Phone 7920 Administration Guide for Cisco CallManager Release 3.3 or later, CiscoWireless IP Phone 7920
Copyright © 2000-2004 Cisco Systems, Inc. All rights reserved.

Preface xiii

Overview xiii

Audience xiii

Objectives xiv

Organization xiv

Related Documentation xv

Obtaining Documentation xvi

Cisco.com xvi

Ordering Documentation xvi

Documentation Feedback xvii

Obtaining Technical Assistance xvii

Cisco Technical Support Website xviii

Submitting a Service Request xviii

Definitions of Service Request Severity xix

Obtaining Additional Publications and Information xix

Document Conventions xx

CHAPTER 1

An Overview of the Cisco Wireless IP Phone 7920 1-1

Understanding the Cisco Wireless IP Phone 7920 1-2

Understanding the Voice Wireless Network 1-4

Overview of a Wireless LAN 1-4

The 802.11 Standard for Wireless LAN Communications 1-5

Wireless Access Points 1-6

Security 1-7

Networking Protocols Used with Cisco Wireless IP Phones 1-7

Features Supported on the Cisco Wireless IP Phone 7920 1-10

Feature Overview 1-10

Configuring Telephony Features 1-11

Configuring Network Features for the Cisco Wireless IP Phone 1-12

Providing Users with Feature Information 1-12

Understanding the Requirements for Installing and Configuring the Cisco Wireless IP Phone 7920 1-13

CHAPTER 2

Preparing to Install the Cisco Wireless IP Phone 7920 on Your Wireless Network 2-1

Interactions with Components in the VoIP Network 2-1

Interacting with the Cisco Aironet Access Point 2-2

Associating to an Access Point 2-3

Roaming in a Wireless Network 2-4

Voice Quality in a Wireless Network 2-5

Security Mechanisms in the Wireless Network 2-6

Static WEP Authentication and Encryption 2-7

Cisco LEAP Authentication and Encryption 2-7

Interacting with Cisco CallManager 2-8

Interacting with the DHCP Server 2-8

Understanding the Phone Startup Process 2-9

Understanding Phone Configuration Files and Profile Files 2-12

Determining the MAC Address of a Cisco IP Phone 2-13

Adding Phones to the Cisco CallManager Database 2-13

Support for the Cisco 7920 Phone Type 2-14

Re-registering the Phone Using the Cisco 7920 Phone Type 2-15

Adding Phones with Auto-Registration 2-16

Using Auto-Registration Prior to Release 3.3(3)SR1 2-17

Adding Phones with Auto-Registration and TAPS 2-18

Adding Phones with Cisco CallManager Administration 2-18
Adding Phones with BAT 2-19

CHAPTER 3 **Setting Up the Cisco Wireless IP Phone 7920 3-1**
Before You Begin 3-1
Network Requirements 3-2
Cisco CallManager Configuration 3-2
Wireless Network and Access Point Configuration 3-3
Safety and Performance Information 3-5
Battery Safety Notices 3-6
Providing Power to the Cisco IP Phone 3-8
Installing the Battery 3-9
Battery Design 3-9
Power Supply for Charging the Battery 3-11
Charging the Phone Battery 3-12
Using the Desktop Charger 3-13
Powering On the Wireless IP Phone 7920 3-16
Active and Standby Phone Modes 3-17
Startup Settings for a Network Without DHCP 3-18

CHAPTER 4 **Using the Cisco 7920 Configuration Utility 4-1**
Overview of the Cisco 7920 Configuration Utility 4-1
Description of the Cisco 7920 Configuration Utility 4-2
System Requirements 4-2
Hardware Requirements 4-3
Software Requirements 4-3
How to Install the Cisco 7920 Configuration Utility 4-4
Installing the Cisco 7920 Configuration Utility 4-4
Installed Files 4-4

Uninstalling the Cisco 7920 Configuration Utility 4-5
Installing the USB Driver 4-5
Network Connection for the Cisco 7920 Configuration Utility 4-7
Overview of the Application Windows 4-8
Current Phone Settings Window 4-8
Log History Window 4-9
Connection Status Bar 4-10
Using the File Menu 4-11
Using the Edit Menu 4-11
Using the View Menu 4-12
Using the Connection Menu 4-12
How to Use the Cisco 7920 Configuration Utility 4-15
Using the Cisco 7920 Configuration Utility 4-15
Using the Settings Wizard 4-16
Using the Phone Preferences Window 4-18
Phone Preference Window Task Buttons 4-19
Configuring the Phone Settings 4-20
Setting System Parameters 4-21
Configuring RF Network Settings 4-22
Setting Network Security 4-23
Configuring Phone Settings 4-25
Setting the Phone Lock Password 4-27
Configuration File Format 4-29
Available Settings for System Parameters 4-30
Available Settings for RF Network 4-30
Available Settings for Phone Configurations 4-31

CHAPTER 5 **Configuring Network Settings on the Cisco Wireless IP Phone 7920** 5-1
Accessing Network Configuration Settings on the Phone 5-1
Displaying the Network Configuration Menu 5-2

Guidelines for Editing Settings in the Network Configuration Menu 5-3
Verifying or Entering Network Settings 5-4
Viewing the Current Configuration 5-6
Modifying DHCP Settings 5-7
Enabling DHCP 5-8
Disabling DHCP 5-8
Configuring Static Settings 5-9
Configuring TFTP Options 5-13
Viewing the Media Access Control (MAC) Address 5-14

CHAPTER 6

Configuring the Wireless Network Settings on the Cisco Wireless IP Phone 7920 6-1

Accessing the Wireless Network Configuration Settings on the Phone 6-2
Displaying the 802.11b Configuration Menu 6-2
Entering or Verifying Wireless Settings 6-4
Setting Up the Service Set Identifier (SSID) 6-5
Selecting the Authentication Type 6-6
Setting Up the Wired Equivalent Privacy Keys 6-7
Configuring a WEP Key 6-8
Activating the Wireless Settings 6-9
Entering or Verifying 802.11b Configuration Settings 6-10
Viewing the Associated Access Point MAC Address 6-10
Viewing the Associated AP SSID 6-11
Viewing the Network Type 6-11
Setting the Cisco Light Extensible Authentication Protocol (LEAP) 6-12
Setting the LEAP Username 6-12
Setting the LEAP Password 6-13
Switching the LEAP Prompt Mode On and Off 6-14
Performing a Site Survey Verification 6-15
Site Survey Verification Steps 6-15

Using the Cisco Wireless IP Phone 7920 Site Survey Utility 6-16
Requirements for an Optimal Wireless Voice Environment 6-18

CHAPTER 7 **Configuring Features and Users 7-1**
Configuring Telephony Features Using Cisco CallManager Administration 7-2
Creating Custom Phone Rings 7-4
Downloading Loud Ring Tones 7-5
Adding Users to Cisco CallManager 7-6

CHAPTER 8 **Viewing Status, Statistics, and Firmware Information on the Cisco Wireless IP Phone 7920 8-1**
Viewing the Current Configuration 8-1
Viewing Network Statistics 8-2
Viewing Firmware Versions 8-3
Viewing the Hardware Information 8-4

CHAPTER 9 **Troubleshooting the Cisco Wireless IP Phone 7920 9-1**
Resolving Startup and Connectivity Problems 9-2
Symptom: The Cisco Wireless IP Phone Does Not Complete the Normal Start Up Process 9-2
Symptom: The Cisco Wireless IP Phone Does Not Associate with a Cisco Aironet Access Point 9-3
Verifying Access Point Settings 9-3
Symptom: The Cisco Wireless IP Phone Does Not Register with Cisco CallManager 9-4
Registering the Phone with Cisco CallManager 9-5
Checking Network Connectivity 9-5
Verifying TFTP Server Settings 9-5
Verifying IP Addressing and Routing 9-6
Verifying DNS Settings 9-7

Verifying Cisco CallManager Settings 9-7
Cisco CallManager and TFTP Services Are Not Running 9-8
Creating a New Configuration File 9-9
Resolving Voice Quality and Roaming Problems 9-10
Symptom: Cisco Wireless IP Phone Resets Unexpectedly 9-10
Verifying Access Point Settings 9-10
Identifying Intermittent Network Outages 9-11
Verifying DHCP Settings 9-11
Checking Static IP Address Settings 9-11
Verifying Voice VLAN Configuration 9-11
Verifying that the Phones Have Not Been Intentionally Reset 9-12
Eliminating DNS or Other Connectivity Errors 9-12
Symptom: The Cisco Wireless IP Phone Has Audio Problems 9-13
Symptom: The Cisco Wireless IP Phone Does Not Roam Properly 9-14
General Troubleshooting Information 9-15
Troubleshooting Tips for the Cisco Wireless IP Phone 7920 9-15
Logging Information for Troubleshooting 9-18
Using a System Log Server 9-18
Using the Trace Route Option on the Cisco Wireless IP Phone 9-18
Erasing the Local Configuration 9-19
Administration Options on the Phone Menus 9-20
Accessing Hidden Options on the Phone Menus 9-20
Using Hidden Options on the Phone Menus 9-21
Disabling the Power Save Mode 9-21
Performing a Trace Route 9-22
Selecting the Data Rate 9-22
Selecting the Transmit Power 9-23
Changing the Cisco Discovery Protocol (CDP) Settings 9-23
Troubleshooting Tips for the Cisco 7920 Configuration Utility 9-24
Troubleshooting Information for Basic Problems 9-25

Windows User Interface Operation Errors 9-25
TCP Connection Errors 9-25
File Format or File Access Errors 9-26
TFTP or Network Errors 9-27
Security Errors 9-28
Where to Go for More Troubleshooting Information 9-29

APPENDIX A **Providing Information to Users Via a Website A-1**
How Wireless IP Phones Operate A-1
How Users Get Copies of Cisco IP Phone Manuals A-2
How Users Configure Phone Features A-3
How Users Access Voice Messages A-4

APPENDIX B **Supporting International Users B-1**

APPENDIX C **Updating Firmware for the Cisco Wireless IP Phone 7920 C-1**
Installing the New Firmware Image with Cisco CallManager 3.3(3) Service Release 1 and Later C-1
Upgrading Firmware for the Cisco Wireless IP Phone 7920 with Cisco CallManager Express 3.0 C-3
Upgrading Firmware on the Cisco Wireless IP Phone 7920 C-3

APPENDIX D **Physical and Operating Environment Specifications D-1**

INDEX

Preface

Overview

Cisco Wireless IP Phone 7920 Administration Guide provides the information you need to understand, install, configure, and manage the Cisco Wireless IP Phone 7920 on your network. This guide is intended to be used to administer phones running with Cisco CallManager Release 4.0 or higher.

Audience

Network engineers, system administrators, or telecom engineers should review this guide to learn the steps required to properly set up the Cisco IP Phone on the network.

The tasks described are considered to be administration-level tasks and are not intended for end-users of the phones. Many of the tasks involve configuring network settings and affect the phone's ability to function in the network.

Because of the close interaction between the Cisco IP Phone and Cisco CallManager, these tasks require familiarity with Cisco CallManager.

Objectives

This guide provides the required steps to get the Cisco Wireless IP Phone 7920 up and running on a wireless Voice-over-IP (VoIP) network. Because of the complexity of an IP telephony network, this guide does not provide complete and detailed information for procedures that you need to perform on the Cisco CallManager application or other network devices.

Organization

This guide is organized as follows:

Chapter	Description
Chapter 1, "An Overview of the Cisco Wireless IP Phone 7920"	Provides a conceptual overview and description of the Cisco Wireless IP Phone 7920
Chapter 2, "Preparing to Install the Cisco Wireless IP Phone 7920 on Your Wireless Network"	Describes how the IP Phone interacts with other key IP telephony and wireless network components, and provides an overview of the tasks required prior to installation
Chapter 3, "Setting Up the Cisco Wireless IP Phone 7920"	Describes how to properly and safely install and configure the Cisco Wireless IP Phone on your network
Chapter 4, "Using the Cisco 7920 Configuration Utility"	Describes how to install and use the Cisco Wireless IP Phone 7920 to import and export configuration files for the Cisco Wireless IP Phone.
Chapter 5, "Configuring Network Settings on the Cisco Wireless IP Phone 7920"	Describes how to configure network settings, by using the Network Configuration menu on the Cisco Wireless IP Phone.
Chapter 6, "Configuring the Wireless Network Settings on the Cisco Wireless IP Phone 7920"	Describes how to configure the wireless network settings using the 802.11b menu on the Cisco Wireless IP Phone

Chapter	Description
Chapter 7, “Configuring Features and Users”	Provides an overview of procedures for configuring telephony features and adding users to Cisco CallManager
Chapter 8, “Viewing Status, Statistics, and Firmware Information on the Cisco Wireless IP Phone 7920”	Explains how to view phone configuration status, network statistics, and firmware information from the Cisco Wireless IP Phone
Chapter 9, “Troubleshooting the Cisco Wireless IP Phone 7920”	Provides tips for troubleshooting the Cisco Wireless IP Phone
Appendix A, “Providing Information to Users Via a Website”	Provides suggestions for setting up a website for providing users with important information about their Cisco Wireless IP Phone
Appendix B, “Supporting International Users”	Provides information about setting up phones in non-English environments
Appendix C, “Updating Firmware for the Cisco Wireless IP Phone 7920”	Explains how to update the firmware version for a phone
Appendix D, “Physical and Operating Environment Specifications”	Provides technical specifications of the Cisco Wireless IP Phone 7920

Related Documentation

For more information about the Cisco Wireless IP Phone 7920, refer to the following publications, which are available at this location:

http://www.cisco.com/univercd/cc/td/doc/product/voice/c_ipphon/english/wip7920/index.htm

- *Cisco Wireless IP Phone 7920 Phone Guide*
- *Cisco Wireless IP Phone 7920 Accessory Guide*
- *Regulatory Compliance and Safety Information for the Cisco Wireless IP Phone 7920*
- *Cisco Wireless 7920 Design and Deployment Guide*

For more information about Cisco CallManager, refer to the following publications, which are available at this location:

http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/index.htm

- *Cisco CallManager Administration Guide*
- *Cisco CallManager Features and Services Guide*
- *Cisco CallManager System Guide*
- *Cisco CallManager Serviceability Administration Guide*
- *Cisco CallManager Serviceability System Guide*
- *Cisco IP Phones and Services Application Developers Guide*
- *Cisco CallManager Troubleshooting Guide*
- *Bulk Administration Tool User Guide*

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

http://www.cisco.com/public/countries_languages.shtml

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:

  http://www.cisco.com/en/US/partner/ordering/index.shtml

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can send comments about technical documentation to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

Cisco Technical Support Website

The Cisco Technical Support Website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, 365 days a year at this URL:

http://www.cisco.com/techsupport

Access to all tools on the Cisco Technical Support Website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

http://tools.cisco.com/RPF/register/register.do

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool automatically provides recommended solutions. If your issue is not resolved using the recommended resources, your service request will be assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

http://www.cisco.com/techsupport/servicerequest

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553 2447

For a complete list of Cisco TAC contacts, go to this URL:

http://www.cisco.com/techsupport/contacts

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—Your network is “down,” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

  http://www.cisco.com/go/marketplace/

- The Cisco *Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:

  http://cisco.com/univercd/cc/td/doc/pcat/

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

  http://www.ciscopress.com

- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

  http://www.cisco.com/packet

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/ipj

- World-class networking training is available from Cisco. You can view current offerings at this URL:

  http://www.cisco.com/en/US/learning/index.html

Document Conventions

This document uses the following conventions:

Convention	Description
boldface font	Commands and keywords are in **boldface**.
italic font	Arguments for which you supply values are in *italics*.
[ ]	Elements in square brackets are optional.

Convention	Description
{ x | y | z }	Alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
`screen` font	Terminal sessions and information the system displays are in `screen` font.
`boldface screen` font	Information you must enter is in **`boldface screen`** font.
italic screen font	Arguments for which you supply values are in *italic screen* font.
^	The symbol ^ represents the key labeled Control—for example, the key combination ^D in a screen display means hold down the Control key while you press the D key.
< >	Nonprinting characters, such as passwords are in angle brackets.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.

Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Warnings use the following conventions:

Warning **IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Waarschuwing **BELANGRIJKE VEILIGHEIDSINSTRUCTIES**

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.

BEWAAR DEZE INSTRUCTIES

Varoitus **TÄRKEITÄ TURVALLISUUSOHJEITA**

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.

SÄILYTÄ NÄMÄ OHJEET

Attention **IMPORTANTES INFORMATIONS DE SÉCURITÉ**

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS

Warnung **WICHTIGE SICHERHEITSHINWEISE**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

Avvertenza **IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.

CONSERVARE QUESTE ISTRUZIONI

Advarsel **VIKTIGE SIKKERHETSINSTRUKSJONER**

Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.

TA VARE PÅ DISSE INSTRUKSJONENE

Aviso **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.

GUARDE ESTAS INSTRUÇÕES

¡Advertencia! **INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES

Varning! **VIKTIGA SÄKERHETSANVISNINGAR**

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.

SPARA DESSA ANVISNINGAR

Figyelem **FONTOS BIZTONSÁGI ELOÍRÁSOK**

Ez a figyelmezeto jel veszélyre utal. Sérülésveszélyt rejto helyzetben van. Mielott bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplo figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján keresheto meg.

ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!

Предупреждение **ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ**

Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.

СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ

警告　重要的安全性说明

此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

警告　安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

An Overview of the Cisco Wireless IP Phone 7920

The Cisco Wireless IP Phone 7920 provides wireless voice communication over an Internet Protocol (IP) network. Like traditional analog telephones, you can place and receive phone calls and access features such as mute, hold, transfer, and speed dial. In addition, because the phone connects to your wireless LAN, you can place and receive phone calls from anywhere in your wireless environment. You can also change IP telephony features through your data network.

This manual describes the Cisco Wireless IP Phone 7920 that provides 802.11b wireless voice communications in conjunction with Cisco CallManager and Cisco Aironet 802.11b Access Points (APs). This phone model supports G.711a, G.711u, and G.729a audio compression coder-decoders (codecs). You must configure and manage a Cisco Wireless IP Phone like other wireless network devices.

This chapter includes the following topics:

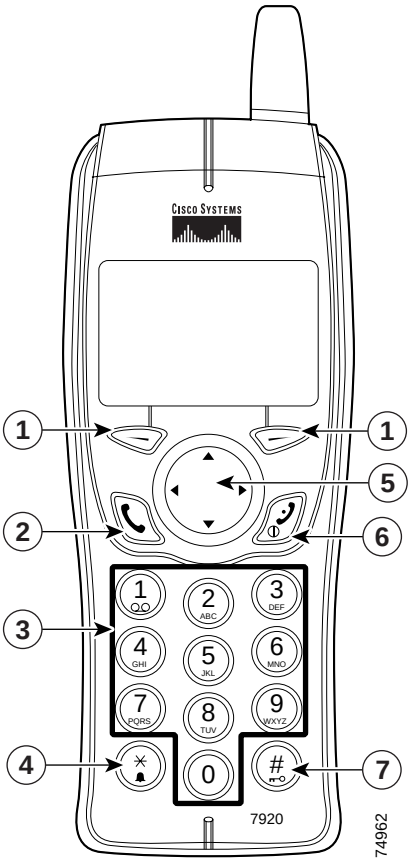
- Understanding the Cisco Wireless IP Phone 7920, page 1-2
- Understanding the Voice Wireless Network, page 1-4
- Networking Protocols Used with Cisco Wireless IP Phones, page 1-7
- Features Supported on the Cisco Wireless IP Phone 7920, page 1-10
- Understanding the Requirements for Installing and Configuring the Cisco Wireless IP Phone 7920, page 1-13

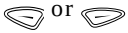
Understanding the Cisco Wireless IP Phone 7920

The Cisco Wireless IP Phone 7920 is an 802.11b wireless IP phone that provides comprehensive voice communications in conjunction with Cisco CallManager and Cisco Aironet 802.11b Access Points (APs) in a private business communications network.

Figure 1-1 shows the Cisco Wireless IP Phone 7920. The callout table describes the functions of the keys on the phone.

Figure 1-1 Cisco IP Phone 7920 Keys



1		Left or Right softkey—Activates the item in the label above the softkey.
2		Answer/Send key—Answers a call or dials a number.
3		Number keys (0-9)—Use these to enter numbers and characters. Number keys (2-9)—Use these to activate Speed Dial hot keys.
4		Asterisk (*) key—Toggles between ring and vibrate mode. When you enter characters, toggles between upper and lower case. Refer to the *Cisco Wireless IP Phone 7920 Guide*.
5		Arrow keys—Moves from one function to another. This guide uses these directional arrows ▲, ▼, ◀, or ▶.
6		Power/End key—Turns the phone on or off, silences a ringing call, or ends a connected call.
7		Pound (#) key—Toggles between locking and unlocking the key pad. Allows you to access special characters when you are entering text.

Related Topics

- Understanding the Voice Wireless Network, page 1-4
- Networking Protocols Used with Cisco Wireless IP Phones, page 1-7
- Features Supported on the Cisco Wireless IP Phone 7920, page 1-10
- Understanding the Requirements for Installing and Configuring the Cisco Wireless IP Phone 7920, page 1-13

Understanding the Voice Wireless Network

Voice over IP (VoIP) telephones use a hard-wired connection to the network for transmitting call control messages and voice packets. With the introduction of wireless communication, mobile wireless IP phones provide similar communication features within the corporate wireless local area network (WLAN). Use the following topics to understand your voice wireless network:

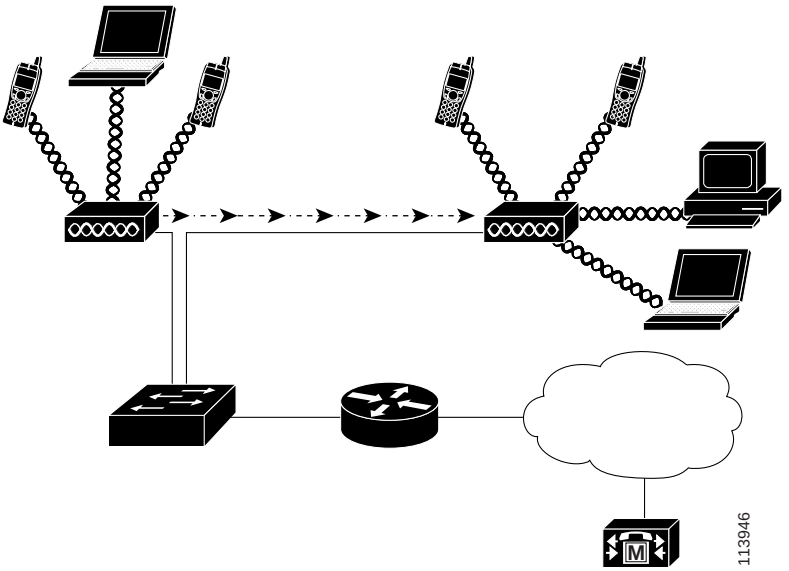
- Overview of a Wireless LAN, page 1-4
- The 802.11 Standard for Wireless LAN Communications, page 1-5
- Wireless Access Points, page 1-6
- Security, page 1-7

Overview of a Wireless LAN

In a traditional LAN, phones and computers use cables to transmit messages and data packets over a wire conductor. Wireless LANs use radio waves to carry the messages and data packets. WLANs require access points that receive and transmit radio signals. Cisco Aironet series access points including the 1200, 1100, and 350 series models support voice on a WLAN. Figure 1-2 shows a typical WLAN topology that incorporates both wireless data with laptop computers and wireless IP telephony (WIPT) with Cisco Wireless IP Phone 7920.

When a wireless device powers on, it immediately searches for and becomes associated with an access point. As users move from one location to another within the corporate WLAN environment, the wireless device roams out of range of one access point and into the range of another. Data and voice calls are transmitted from the access point to the switch and router by using the wired, Ethernet network. Phone calls are sent to the Cisco CallManager server for call processing and routing.

Figure 1-2 Wireless LAN with Cisco Wireless IP Phone 7920s



The 802.11 Standard for Wireless LAN Communications

Wireless LANs must follow the Institute of Electrical and Electronics Engineers (IEEE) 802.11 standards that define the protocols that govern all Ethernet-based wireless traffic. The 802.11b sub-standard is the most prevalent standard in wireless LAN communications and is commonly called WiFi. The 802.11b standard specifies the radio frequency (RF) of 2.4 GHz for both transmitting and receiving data at speeds of 1, 2, 5.5 and 11 Mbps.

The 2.4 GHz RF range is an open frequency range that does not require licensing. Many devices operate in this bandwidth including cordless phones and microwave ovens; consequently, wireless communication is susceptible to interference or noise. Interference does not destroy the signal, but can impede the transmission speed and reduce an 11 Mbps signal down to a 1Mbps signal. In addition, RF interference can reduce the voice quality over the wireless network. To help prevent interference, direct-sequence spread spectrum (DSSS) technology was developed to spread the signal out over the frequency range or bandwidth. DSSS technology multiplexes chunks of data over several frequencies so that multiple

devices can communicate without interference. Each device has a special code that it uses to identify its data packets and to ignore all others. The Cisco wireless products use DSSS technology to support multiple devices on the WLAN.

Wireless Access Points

The critical components in the wireless network are the access points (APs) that provide the "hot spots" or wireless links to the network. Cisco requires that Cisco IOS is running on the APs that support voice calls since Cisco IOS provides features for managing voice traffic. The minimum version of IOS you can use is 12.2(15)JA. The Cisco Aironet APs that support IOS include the following AP series:

- Cisco Aironet AP 350
- Cisco Aironet AP 1100
- Cisco Aironet AP 1200

Each AP has a hard-wired connection to a network layer switch, such as a Cisco Catalyst 4000, that is configured on the LAN. The switch provides access to gateways and the Cisco CallManager server to support wireless IP telephone (WIPT).

APs transmit and receive RF signals over channels within the 2.4 GHz frequency band. Regulatory domains determine the number of channels that wireless communications can use within the 2.4 GHz frequency band. The Cisco Aironet APs support up to 11 communication channels in North America, 13 channels in Europe (ETSI) and 14 channels in Japan. An access point broadcasts on a specific channel within the available channel range. To provide a stable wireless environment and reduce channel interference, you must specify non-overlapping channels for each AP. The recommended channels are 1, 6, and 11.

The AP has a transmission range or coverage area that depends on its type of antenna and transmission power. The access point coverage range is from 500 to 1000 feet with effective isotropic radiated power (EIRP) output that scales at 1, 5, 20, 50, and 100mW. To provide effective coverage, access points need a range overlap of approximately 20 percent to allow uninterrupted connections as phone users roam from one access point to another.

Wireless network devices use a service set identifier (SSID).The SSID provides a way to group a set of user devices that can associate with a set of access points. Each wireless device that can use the access point is configured with the same SSID as the AP.

Security

All wireless LAN traffic is seen by all other WLAN devices that are within range, so securing voice communications is important. To ensure that voice traffic is not manipulated or intercepted by intruders, the Cisco Wireless IP Phone 7920 and Aironet APs are supported in the overall Cisco SAFE security architecture.

The Cisco Wireless IP Telephony solution provides the following additional security areas:

- Network access security to prevent unauthorized logins by using encryption and authentication with wireless encryption protocol (WEP) and Cisco Light Extensible Authentication Protocol (LEAP) and the elimination of rogue APs.
- Password protection for directories and databases including a Cisco Wireless IP Phone 7920 phone lock password.

Related Topics

- Networking Protocols Used with Cisco Wireless IP Phones, page 1-7
- Understanding the Cisco Wireless IP Phone 7920, page 1-2
- Features Supported on the Cisco Wireless IP Phone 7920, page 1-10

Networking Protocols Used with Cisco Wireless IP Phones

Cisco IP Phones support several industry-standard and Cisco networking protocols for voice communication. Table 1-1 provides an overview of the networking protocols that the Cisco Wireless IP Phone 7920 supports.

Table 1-1 Supported Networking Protocols on the Cisco Wireless IP Phone

Networking Protocol	Purpose	Usage Notes
Wi-Fi (802.11b)	802.11 is an open standard that defines wireless methods of transmitting Ethernet traffic and is commonly called Wi-Fi. This standard defines for radio frequencies (RF) and data speed for wireless LAN communications.	Cisco Wireless IP Phone 7920 uses the 802.11b standard with a range of 2.4-2.497 GHz RF and dynamic rate scaling of 1, 2, 5.5, and 11Mbps speeds.
Cisco Discovery Protocol (CDP)	CDP is a device-discovery protocol that runs on all Cisco-manufactured equipment. Using CDP, a device can advertise its existence to other devices and receive information about other devices in the network.	The Cisco IP Phone uses CDP to communicate information such as auxiliary VLAN ID, per-port power management details, and Quality of Service (QoS) configuration information with the Cisco Catalyst switch.
Dynamic Host Configuration Protocol (DHCP)	DHCP dynamically allocates and assigns an IP address to network devices. DHCP enables you to connect an IP phone into the network and have the phone become operational without you needing to manually assign an IP address or configure additional network parameters.	DHCP is enabled by default. If disabled, you must manually configure the IP address, subnet mask, gateway, and an TFTP server on each phone locally. Cisco recommends that you use DHCP custom option 150. With this method, you configure the TFTP server IP address as the option value. For additional supported DCHP configurations, refer to *Cisco CallManager System Guide*.

Table 1-1 Supported Networking Protocols on the Cisco Wireless IP Phone (continued)

Networking Protocol	Purpose	Usage Notes
Internet Protocol (IP)	IP is a messaging protocol that addresses and sends packets across the network.	To communicate using IP, network devices must have an assigned IP address, subnet, and gateway. IP addresses, subnets, and gateways identifications are automatically assigned if you are using the Cisco IP Phone with Dynamic Host Configuration Protocol (DHCP). If you are not using DHCP, you must manually assign these properties to each phone locally.
Real-Time Transport (RTP)	RTP is a standard for transporting real-time data, such as interactive voice and video, over data networks.	Cisco IP Phones use the RTP protocol to send and receive real-time voice traffic from other phones and gateways.
Transmission Control Protocol (TCP)	TCP is a a connection-oriented transport protocol.	Cisco IP Phones use TCP to connect to Cisco CallManager and to access XML services.
Trivial File Transfer Protocol (TFTP)	TFTP allows you to transfer files over the network. On the Cisco IP Phone, TFTP enables you to obtain a configuration file specific to the phone type.	TFTP requires a TFTP server in your network, which can be automatically identified from the DHCP server. If more than one TFTP server is running in your network, you must manually assign a TFTP server to each phone locally.
User Datagram Protocol (UDP)	UDP is a connectionless messaging protocol for delivery of data packets.	Cisco IP Phones receive and process UDP messages.

Related Topics

- Understanding the Phone Startup Process, page 2-9
- Interactions with Components in the VoIP Network, page 2-1
- Modifying DHCP Settings, page 5-7

- Configuring TFTP Options, page 5-13
- Configuring TFTP Options, page 5-13

Features Supported on the Cisco Wireless IP Phone 7920

The Cisco Wireless IP Phone 7920 functions much like a traditional analog phone, allowing you to place and receive telephone calls. In addition to traditional telephony features, the Cisco IP Phone includes features that enable you to administer and monitor the phone as a network device.

This section includes the following topics:

- Feature Overview, page 1-10
- Configuring Telephony Features, page 1-11
- Configuring Network Features for the Cisco Wireless IP Phone, page 1-12
- Providing Users with Feature Information, page 1-12

Feature Overview

Cisco Wireless IP Phone 7920 provides traditional telephony functionality, such as call forwarding and transferring, call pickup, redialing, speed dialing, conference calling, and voice messaging system access. In addition, the Cisco Wireless IP Phone 7920 provides the following features:

- Wireless access to your corporate phone extension and phone services.
- Multiline appearances
- Up to eight speed dial hot keys
- Caller ID for incoming calls
- Softkey access to menus and your personal phone book
- Choice of profiles for the personal user

Like other network devices, you must configure the Cisco Wireless IP Phones to prepare them to access Cisco CallManager and the rest of the IP network. See the "Configuring Network Features for the Cisco Wireless IP Phone" section on

page 1-12 for more information about configuration options. Because the Cisco IP Phone is a network device, you can obtain detailed status information about it. This information can assist you in troubleshooting problems that users might encounter when using their IP phones. See Chapter 8, "Viewing Status, Statistics, and Firmware Information on the Cisco Wireless IP Phone 7920," for tips on using this information.

Related Topics

- Configuring Network Settings on the Cisco Wireless IP Phone 7920, page 5-1
- Configuring Features and Users, page 7-1
- Troubleshooting the Cisco Wireless IP Phone 7920, page 9-1

Configuring Telephony Features

You can modify additional settings on the Cisco IP Phone from the Cisco CallManager Administration application. Use this web-based application to set up phone registration criteria and calling search spaces, and to modify softkey templates, among other tasks. For more information, see Chapter 7, "Configuring Features and Users."

In some places, this manual provides partial instructions for procedures that involve Cisco CallManager Administration. These instructions are intended to point you to the appropriate page in the Cisco CallManager application and to provide some initial guidance.

For more information about the Cisco CallManager Administration application, refer to Cisco CallManager documentation, including *Cisco CallManager Administration Guide*. You can also use the context-sensitive help that is available within the application. Access context-sensitive help by choosing **Help > For this screen** from the main menu bar.

You can access the complete Cisco CallManager documentation suite at this location:

http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/index.htm

Related Topic

- Configuring Telephony Features Using Cisco CallManager Administration, page 7-2

Configuring Network Features for the Cisco Wireless IP Phone

There are two methods for configuring network features such as DHCP, TFTP, and IP settings and wireless settings for the phone.

- Cisco 7920 Configuration Utility
- Network Config menu on the Cisco Wireless IP Phone 7920

You can use the Cisco 7920 Configuration Utility on a personal computer and connect to the Cisco Wireless IP Phone 7920 with a USB cable to configure phone and network settings. For more information, see Chapter 4, “Using the Cisco 7920 Configuration Utility.”

You can also configure network settings on the phone itself. For more information about configuring features from the phone, see Chapter 5, “Configuring Network Settings on the Cisco Wireless IP Phone 7920” and see Chapter 6, “Configuring the Wireless Network Settings on the Cisco Wireless IP Phone 7920.”

Related Topics

- Using the Cisco 7920 Configuration Utility, page 4-1
- Configuring Network Settings on the Cisco Wireless IP Phone 7920, page 5-1
- Configuring the Wireless Network Settings on the Cisco Wireless IP Phone 7920, page 6-1

Providing Users with Feature Information

If you are a system administrator, you are likely the primary source of information for Cisco IP Phone users in your network or company. To ensure that you distribute the most current feature and procedural information, familiarize yourself with Cisco IP Phone documentation. Make sure to visit the Cisco IP Phone web site:

http://www.cisco.com/univercd/cc/td/doc/product/voice/c_ipphon/index.htm

From this site, you can view and order additional phone documentation. For complete ordering information, see the “Obtaining Documentation” section on page xvi .

In addition to providing documentation, it is important to inform users about available Cisco IP Phone features—including features specific to your company or network—and about how to access and customize those features, if appropriate.

For a summary the key information that the system administrator can provide to phone users, see Appendix A, "Providing Information to Users Via a Website."

Related Topics

- Understanding the Requirements for Installing and Configuring the Cisco Wireless IP Phone 7920, page 1-13
- Providing Information to Users Via a Website, page A-1

Understanding the Requirements for Installing and Configuring the Cisco Wireless IP Phone 7920

To install and configure the Cisco Wireless IP Phone, you must configure some network settings, set up Cisco CallManager, and make changes locally on the phone.

See Table 1-2 for an overview of required procedures. For detailed information about these procedures, refer to the sources shown.

Table 1-2 Overview of Configuration Procedures for the Cisco Wireless IP Phone

Required Task	Purpose	For More Information
1. Gather the following information about the phone for use in Cisco CallManager Administration: • Information requested in the Device Information fields, if applicable, such as the device pool and calling search space. • The Cisco CallManager user to associate with the phone. • The number of lines and associated directory numbers to assign to the phone • Features to be added and configured for the phone.	You will refer to this information when using the Cisco CallManager Administration Phone Configuration web page to configure a phone. The Device Information fields on this page will auto-populate if information is relevant and available. Edit fields if you want to override system settings on a per-device basis.	See the "Adding Phones to the Cisco CallManager Database" section on page 2-13. See the "Configuring Telephony Features Using Cisco CallManager Administration" section on page 7-2. Refer to *Cisco CallManager System Guide*. Refer to *Cisco CallManager Administration Guide*.
2. Configure routers, gateways, and switches to handle voice communication.	Establishes the infrastructure for the IP telephony network.	See the "Interactions with Components in the VoIP Network" section on page 2-1 and the documentation included with these devices.
3. Perform a site survey to determine where to place and install access points (APs) for wireless voice coverage	Identifies areas where RF signal coverage is required. Determines high usage areas (conference rooms), areas with RF interference (labs, equipment rooms), and areas not covered for wireless data (stairwells, elevators, breezeways)	Refer to the *Wireless 7920 Design and Deployment Guide*

Table 1-2 Overview of Configuration Procedures for the Cisco Wireless IP Phone (continued)

Required Task	Purpose	For More Information
4. Install and Configure Cisco Aironet Access Points to handle wireless communications for phones.	Establishes the coverage, channels, signal strength, and authentication for the wireless voice network.	Refer to the *Wireless 7920 Design and Deployment Guide*
5. Decide how you want to add phones to the Cisco CallManager database: • With auto-registration • With Cisco CallManager Administration only • With the Bulk Administration Tool (BAT) only • With BAT and the Tool for Auto-Registered Phones Support (TAPS)	How you add the phones to Cisco CallManager determines how the directory number is assigned and whether you need to obtain a MAC address first, among other things.	See the "Adding Phones to the Cisco CallManager Database" section on page 2-13. Refer to *Cisco CallManager Administration Guide*. Refer to *Bulk Administration Tool User Guide for Cisco CallManager.*
6. Obtain the MAC address from the IP phone.	Not necessary if you plan to add phones to the Cisco CallManager database using auto-registration only or in conjunction with the Tool for Auto-Registered Phones Support (TAPS).	See the "Determining the MAC Address of a Cisco IP Phone" section on page 2-13.
7. Configure network settings and phone settings on the Cisco Wireless IP Phone or by using the Configuration Utility.	Sets system parameters such as IP settings (if not using DHCP in the network) and assigns a TFTP server. Also sets phone settings such as ring tone and phone lock password.	See the "Configuring Network Settings on the Cisco Wireless IP Phone 7920" section on page 5-1 See the "Using the Cisco 7920 Configuration Utility" section on page 4-1.

Table 1-2 Overview of Configuration Procedures for the Cisco Wireless IP Phone (continued)

Required Task	Purpose	For More Information
8. Configure wireless network settings on the Cisco Wireless IP Phone or by using the Configuration Utility.	Sets SSID, authentication type, and transmission rate and power for the phone.	See the "Configuring the Wireless Network Settings on the Cisco Wireless IP Phone 7920" section on page 6-1 See the "Using the Cisco 7920 Configuration Utility" section on page 4-1.
9. Configure the phone features such as call waiting, call forward, call park, and call pickup.	Provides enhanced telephony functionality.	See the "Configuring Telephony Features Using Cisco CallManager Administration" section on page 7-2 Refer to *Cisco CallManager Administration Guide*.
10. Add users to Cisco CallManager.	Associates a user with a phone, enabling access to the User Options web-based application where users set up features such as call forwarding and speed dial, and subscribe to services.	See the "Adding Users to Cisco CallManager" section on page 7-6. Refer to *Cisco CallManager Administration Guide*.
11. Power on the Cisco Wireless IP Phone to test that it connects to the network.	Ensures that the phone communicates with the access point and Cisco CallManager.	See the Understanding the Phone Startup Process, page 2-9
12. Provide information to end users about how to use their phones and how to configure their phone options.	Ensures that users have adequate information to successfully use their Cisco IP Phones.	See the Appendix A, "Providing Information to Users Via a Website."

Related Topics

- Understanding the Cisco Wireless IP Phone 7920, page 1-2
- Understanding the Voice Wireless Network, page 1-4
- Networking Protocols Used with Cisco Wireless IP Phones, page 1-7

Preparing to Install the Cisco Wireless IP Phone 7920 on Your Wireless Network

The Cisco Wireless IP Phone 7920 enables you to communicate using voice over a wireless data network. To provide this capability, the IP Phones depend upon and interact with wireless access points and key Cisco IP Telephony components, including Cisco CallManager.

This chapter provides you with an important overview of the interaction between the Cisco Wireless IP Phone 7920 and other key components of the Voice over IP (VoIP) network in the wireless LAN (WLAN) environment.

This chapter includes the following topics:

- Interactions with Components in the VoIP Network, page 2-1
- Understanding the Phone Startup Process, page 2-9
- Understanding Phone Configuration Files and Profile Files, page 2-12
- Determining the MAC Address of a Cisco IP Phone, page 2-13
- Adding Phones to the Cisco CallManager Database, page 2-13

Interactions with Components in the VoIP Network

The Cisco Wireless IP Phone 7920 must interact with several components in the wireless local area network (WLAN) order to place and receive calls successfully.

The following topics provide an overview of the network components:

- Interacting with the Cisco Aironet Access Point, page 2-2
- Roaming in a Wireless Network, page 2-4
- Voice Quality in a Wireless Network, page 2-5
- Security Mechanisms in the Wireless Network, page 2-6
- Interacting with Cisco CallManager, page 2-8
- Interacting with the DHCP Server, page 2-8

Interacting with the Cisco Aironet Access Point

Wireless voice communication devices use the same access points as wireless data communication devices, but voice traffic over a WLAN requires different equipment configurations and layouts than a WLAN that is used exclusively for data traffic. Data transmission can tolerate a higher level of RF noise, packet delay, and channel contention than voice transmission can. Delays during data transmission such as a web page displaying more slowly, do not impact the end user greatly. But delays during voice transmission can result in choppy or broken audio making the phone call inaudible.

Wireless voice users are mobile and will roam across a campus or between floors in a building while connected to a call. On the other hand, data users might move their PC to another location, but they reconnect at the new location. The ability to roam is one of the advantages of wireless voice; therefore, RF coverage needs to include areas not usually covered for data, such as stairwells, elevators, quiet corners outside conference rooms, and passage ways.

To assure good voice quality and optimal RF signal coverage, you must perform a site survey that determines thresholds specific to wireless voice. The survey results provide information for the design and layout of the WLAN for voice. For more information about the site survey, refer to the *Cisco Wireless IP Phone 7920 Deployment Recommendations* document.

After deploying and using wireless voice, you should continue to perform post installation site surveys to verify that the locations of the access points and their configuration continues to meet the needs of your wireless voice users. When you add a group of new users or install more equipment or stack large amounts of inventory, you are changing the wireless environment. You need to verify that the

access point coverage is still adequate for optimal voice communications. See the "Performing a Site Survey Verification" section on page 6-15 for more information.

Related Topics

- Overview of a Wireless LAN, page 1-4
- Wireless Network and Access Point Configuration, page 3-3

Associating to an Access Point

At startup, the Cisco Wireless IP Phone 7920 uses its radio to scan for access points with SSIDs and encryption types that it recognizes. The phone lists eligible access point targets and uses the following two variables to determine the best access point with which to associate.

Received Signal Strength Indicator (RSSI)—The phone uses this value to determine the signal strength of available access points within the RF coverage area. The phone attempts to associate with the access point with the highest RSSI value.

QoS Basis Service Set (QBSS)—The access point sends this beacon information element (IE) to communicate the access point channel utilization to the Cisco Wireless IP Phone. The phone uses the QBSS value to determine if channel utilization is high and the access point is unable to effectively handle more traffic.

The Cisco Wireless IP Phone associates with the access point with the highest RSSI and lowest QBSS values that have matching SSID and encryption types.

Related Topics

- Roaming in a Wireless Network, page 2-4
- Overview of a Wireless LAN, page 1-4
- Wireless Network and Access Point Configuration, page 3-3

Roaming in a Wireless Network

An obvious advantage that the Cisco Wireless IP Phones have over wired IP Phones is the ability to move from one place to another while conversing on the phone. Unlike cellular phones that have nationwide coverage, the coverage area for Cisco Wireless IP Phone is much smaller so phone users must roam from one access point to another more frequently.

To understand implications of roaming in the WLAN, the following descriptions are examples of common roaming events:

Pre-call Roaming—A Cisco Wireless IP Phone 7920 user powers on the phone in the office so the phone associates with the nearby access point. The user leaves one building and moves to another building where he places a call. The phone associates with a different access point in order to place the call from the new location. If the associated access point is within the same Layer 2 VLAN, the IP address remains the same for the phone. But, if the roaming phone crosses a Layer 3 boundary and DHCP is enabled, the phone will recognize that it is no longer in the same subnet and will request a new IP address before it can connect to the network and place the call.

Mid-call Roaming—A Cisco Wireless IP Phone 7920 user is actively engaged in a call and moves from one building to another. The roaming event occurs when the phone physically moves enough so that the radio in the phone associates to a different access point. As the user moves across the location, the phone may roam to two or three access points. As long as the access points are in the same layer 2 subnet, the Cisco Wireless IP Phone keeps the same IP address and the call continues. As a Cisco Wireless IP Phone roams between access points, it will re-authenticate with each new access point. See the "Security Mechanisms in the Wireless Network" section on page 2-6 for information about authentication.

If the Cisco Wireless IP Phone user moves from an access point that covers IP Subnet A to an access point that covers IP Subnet B, the phone no longer has an IP address or gateway that is valid within the new subnet. The call will disconnect because the Cisco Wireless IP Phone 7920 does not support Layer 3 roaming by using Mobile IP (MIP). As you can see, it is important to understand how WLAN IP phone coverage overlays with the Layer 2 and Layer 3 IP addressing within the IP network.

Related Topics

- Voice Quality in a Wireless Network, page 2-5

- Overview of a Wireless LAN, page 1-4
- Wireless Network and Access Point Configuration, page 3-3

Voice Quality in a Wireless Network

Voice traffic on the Wireless IP network, like data traffic, is susceptible to delay, jitter, and packet loss. With data transmission, these issues do not impact the end user as critically as a voice call. To ensure that voice traffic receives timely and reliable treatment with low delay and low jitter, you must use Quality of Service (QoS). To manage voice traffic more efficiently, use separate virtual LANs (VLANs) for voice and data on the network switches and the access points. By isolating the voice traffic onto a separate VLAN, you can use QoS to provide priority treatment for voice packets when traveling across the network. In addition to configuring separate VLANs on the network switches, the access points that are configured to support voice connections on the wireless LAN (WLAN) must have the same separate VLANs:

- Auxiliary VLAN—Voice traffic to and from the wireless IP phone
- Native VLAN—Data traffic to and from the wireless PC (native VLAN)

Assign separate Service Set Identifiers (SSIDs) to the voice and data VLANs. You can also configure a separate management VLAN in the WLAN, but do not associate an SSID with the management VLAN.

By separating the phones onto a voice VLAN, you can ensure that voice traffic gets priority treatment over data and management traffic resulting in lower delay and fewer lost packets.

For more information, refer to the *Cisco Wireless IP Phone 7920 Design and Deployment Guide.*

Related Topics

- Security Mechanisms in the Wireless Network, page 2-6
- Interacting with Cisco CallManager, page 2-8
- Wireless Network and Access Point Configuration, page 3-3

Security Mechanisms in the Wireless Network

Before a wireless client device can communicate on the network through the access point, it must authenticate to the access point using open or shared-key authentication. For maximum security, client devices should also authenticate to the network using MAC-address or EAP authentication, authentication types that rely on an authentication server on the network.

Open Authentication

Open authentication allows any device to authenticate and then attempt to communicate with the access point. Using open authentication, any wireless device can authenticate with the access point, but the device can communicate only if its WEP keys match the access point's. Devices that are not using WEP do not attempt to authenticate with an access point that is using WEP. Open authentication does not rely on a RADIUS server on the network.

Shared Key Authentication

During shared key authentication, the access point sends an unencrypted challenge text string to any device attempting to communicate with the access point. The device requesting authentication encrypts the challenge text and sends it back to the access point. If the challenge text is encrypted correctly, the access point allows the requesting device to authenticate. Both the unencrypted challenge and the encrypted challenge can be monitored, however, which leaves the access point open to attack from an intruder who calculates the WEP key by comparing the unencrypted and encrypted text strings. Because of this weakness, shared key authentication can be less secure than open authentication. Like open authentication, shared key authentication does not rely on a RADIUS server on your network.

To ensure that voice traffic is secure, the Cisco Wireless IP Phone 7920 supports both static Wired Equivalent Privacy (WEP) and Cisco Light Extensible Authentication Protocol (LEAP) for authentication and encryption. When you use either mechanism for encryption, both the signaling (SCCP) packets and voice (RTP) packets are encrypted between the access point and the Cisco Wireless IP Phone.

Static WEP Authentication and Encryption

When using static WEP in the wireless network, authentication happens at the access point. The wireless device, such as the Cisco Wireless IP Phone, uses a WEP key that is manually entered at the phone. The WEP key must match with the WEP key that is configured at the access point for successful connections. The Cisco Wireless IP Phone 7920 supports WEP keys that use 40-bit encryption or a 128-bit encryption.

Cisco LEAP Authentication and Encryption

Cisco LEAP is a proprietary authentication and encryption protocol that requires a LEAP-compliant Remote Authentication Dial-in User Service (RADIUS) server such as the Cisco Access Control Server (ACS) to provide access to the user database. LEAP allows wireless devices such as the Cisco Wireless IP Phone and Cisco Aironet Access Point to mutually authenticate by using a user name and password through a centralized RADIUS server. After a successful authentication, the phone and the access point use a dynamic key to encrypt traffic.

When a Cisco Wireless IP Phone roams from one access point to another, the next access point requires LEAP authentication, also. The voice stream will not flow until the LEAP authentication is completed at the next AP through the centralized RADIUS server. To reduce the amount of delay between the AP and the RADIUS server, carefully consider where the RADIUS server is located. A local RADIUS server introduces less delay during roaming than a remote RADIUS server. Small, remote offices can use a RADIUS server on the Cisco AP to authenticate up to 50 usernames.

Related Topics

- Interacting with Cisco CallManager, page 2-8
- Security, page 1-7
- Wireless Network and Access Point Configuration, page 3-3

Interacting with Cisco CallManager

The Cisco Wireless IP Phone 7920 uses Cisco CallManager for handling and routing calls. Cisco CallManager manages the components of the IP telephony system—the phones, access gateways, and the resources necessary for such features as call conferencing and route planning. Cisco recommends that you use Cisco CallManager Release 3.3(3) SR1 or later for wireless voice deployments.

For information about configuring Cisco CallManager to work with the IP devices described in this chapter, refer to *Cisco CallManager Administration Guide* and *Cisco CallManager System Guide.*

Related Topics

- Configuring Telephony Features Using Cisco CallManager Administration, page 7-2
- Interacting with the DHCP Server, page 2-8

Interacting with the DHCP Server

DHCP (Dynamic Host Configuration Protocol) is a communications protocol that lets network administrators manage and automate the assignment of Internet Protocol (IP) addresses in a network. When an IP device is added to the network, a unique IP address must be assigned to it. Without DHCP, the IP address must be entered manually at each device. DHCP allocates IP addresses dynamically and reuses IP addresses when devices no longer need them.

If DHCP is enabled in the network, the Cisco Wireless IP Phone 7920 uses the DHCP scope settings in the DHCP server to perform the phone provisioning bootup process. The administrator must configure the settings of the DHCP server in the Cisco CallManager network.

The DHCP scope settings include the following:

- TFTP server
- DNS server IP address (optional unless using host names)
- Pool and range of the subnet mask, IP address, and gateway

The priority of the DHCP settings for the TFTP server is unique to the Cisco Wireless IP Phone 7920, which is set as follows.

Priority	DHCP Settings
1st	DHCP option 150
2nd	DHCP option 66
3rd	SIADDR
4th	ciscoCM1

If DHCP is disabled, the Cisco Wireless IP Phone 7920 uses the following network settings to perform the phone provisioning bootup process. These static parameters must be configured for each Cisco Wireless IP Phone 7920.

- Primary TFTP server IP
- Primary DNS server IP
- Secondary DNS server IP
- IP address
- Subnet mask IP
- Primary gateway IP

Related Topic

Modifying DHCP Settings, page 5-7

Understanding the Phone Startup Process

When connecting to the wireless VoIP network, the Cisco Wireless IP Phone 7920 goes through a standard startup process composed of several steps, as described in Table 2-1. Depending on your specific network configuration, not all of these steps may occur on your Cisco Wireless IP Phone.

Table 2-1 Cisco IP Phone Startup Process

Step	Configuration	Related Topics
1. Powering on the phone	The Cisco Wireless IP Phone 7920 has non-volatile Flash memory in which it stores firmware images and user-defined preferences. At startup, the phone runs a bootstrap loader that loads a phone image stored in Flash memory. Using this image, the phone initializes its software and hardware.	Providing Power to the Cisco IP Phone, page 3-9 Resolving Startup and Connectivity Problems, page 9-2
2. Scanning for an access point (AP)	The Cisco Wireless IP Phone 7920 scans the RF coverage area with its radio. The phone searches for access points that have a matching SSID and encryption type. The phone associates with the access point with the highest RSSI and lowest channel utilization.	Interacting with the Cisco Aironet Access Point, page 2-2 Resolving Startup and Connectivity Problems, page 9-2
3. Authenticating with AP	The Cisco Wireless IP Phone 7920 begins the authenticating process. • If set for **Open**, then any device can authenticate through the AP. You can set static WEP encryption. • If set to **Shared Key**, the phone sends the WEP key and the AP must verify the WEP key before network access is available. • If set for **LEAP**, then the LEAP user name and password are authenticated by the RADIUS server before network access is available.	Security Mechanisms in the Wireless Network, page 2-6

Table 2-1 Cisco IP Phone Startup Process (continued)

Step	Configuration	Related Topics
4. Configuring IP network	If the Cisco Wireless IP Phone 7920 is using DHCP to obtain an IP address, the phone queries the DHCP server to obtain one. If you are not using DHCP in your network, you must assign a static IP address to each phone locally. In addition to assigning an IP address, the DHCP server directs the Cisco IP Phone to a TFTP Server. If the phone has a statically defined IP address, you must configure the TFTP server locally on the phone; the phone then contacts the TFTP server directly.	• Modifying DHCP Settings, page 5-7 • Configuring Static Settings, page 5-9 • Resolving Startup and Connectivity Problems, page 9-2
5. Downloading Load ID	The Cisco Wireless IP Phone 7920 checks to verify that the proper firmware is installed or if new firmware is available to download. Cisco CallManager informs devices using .cnf or .cnf.xml format configuration files of their load ID. Devices using .xml format configuration files receive the load ID in the configuration file.	• Understanding Phone Configuration Files and Profile Files, page 2-12
6. Downloading config file	The TFTP server has configuration files and profile files. A configuration file includes parameters for connecting to Cisco CallManager and information about which image load a phone should be running. A profile file contains various parameters and values for phone and network settings.	• Configuring TFTP Options, page 5-13 • Resolving Startup and Connectivity Problems, page 9-2
7. Connecting to Cisco CallManager	The configuration file defines how the Cisco IP Phone communicates with Cisco CallManager. After obtaining the file from the TFTP server, the phone attempts to make a TCP connection to the highest priority Cisco CallManager on the list.	• Interacting with Cisco CallManager, page 2-8 • Resolving Startup and Connectivity Problems, page 9-2

Table 2-1 Cisco IP Phone Startup Process (continued)

Step	Configuration	Related Topics
8. Registering to Cisco CallManager	If the phone was manually added to the database, Cisco CallManager identifies and registers the phone. If the phone was not manually added to the database and auto-registration is enabled in Cisco CallManager, the phone attempts to auto-register itself in the Cisco CallManager database.	• Adding Users to Cisco CallManager, page 7-6

Understanding Phone Configuration Files and Profile Files

Configuration files for a phone are stored on the TFTP server and define parameters for connecting to Cisco CallManager. In general, any time you make a change in Cisco CallManager that requires the phone to be reset, a change is made to the phone's configuration file automatically.

Configuration files also contain information about the correct image load for the phone. If this image load differs from the one currently loaded on a phone, the phone contacts the TFTP server to request the new image file.

The phone first requests the configuration file SEP*xxxxxxxxxxxx*.cnf.xml, where each *xx* is the two-digit lowercase hexadecimal representation of each integer in the phone's MAC address. If the phone cannot find this file, it requests the configuration files XMLDefault.cnf.xml and SEPDefault.cnf.

After the phone obtains one of the .cnf.xml files or the .cnf file, it requests a phone-specific profile file. If a phone cannot find this profile file, it requests the appropriate common profile file.

After the phone finds one of the profile files, or if it cannot find a profile file, it continues with its startup process.

Related Topic

- Understanding the Phone Startup Process, page 2-9

Determining the MAC Address of a Cisco IP Phone

There are several procedures that require you to determine and enter the media access control (MAC) address of a Cisco IP Phone. These procedures include adding phones the Cisco CallManager database using Cisco CallManager Administration or using BAT.

Table 2-2 describes how to determine the MAC address of a phone.

Table 2-2 Determining the MAC Address of a Phone

Cisco IP Phone Model	Method	Reference
7920	Choose **Menu > Network Config > MAC Address** and look at the MAC Address field	See Chapter 5, "Configuring Network Settings on the Cisco Wireless IP Phone 7920"
7920	Remove the battery and look on the back of the phone.	See the "Installing the Battery" section on page 3-9

Related Topics

- Adding Phones with Cisco CallManager Administration, page 2-18
- Adding Phones with BAT, page 2-19

Adding Phones to the Cisco CallManager Database

Before installing the Cisco IP phone, you must choose a method for adding phones to the Cisco CallManager database. The following sections describe these methods:

- Support for the Cisco 7920 Phone Type, page 2-14
- Adding Phones with Auto-Registration, page 2-16

- Adding Phones with Auto-Registration and TAPS, page 2-18
- Adding Phones with Cisco CallManager Administration, page 2-18
- Adding Phones with BAT, page 2-19

Table 2-3 provides an overview of these methods for adding phones to the Cisco CallManager database.

Table 2-3 Methods for Adding Phones to the Cisco CallManager Database

Method	Requires MAC Address?	Notes
Auto-registration	No	Results in automatic assignment of directory numbers
Auto-registration with TAPS	No	Requires auto-registration and the Bulk Administration Tool (BAT); updates information in the Cisco IP Phone and in Cisco CallManager Administration
Using the Cisco CallManager Administration only	Yes	Requires phones to be added individually
Using BAT	Yes	Allows for simultaneous registration of multiple phones

Support for the Cisco 7920 Phone Type

Cisco CallManager release 3.3(3) SR1 and later includes support for the Cisco 7920 phone type in the Cisco CallManager Administration application. (Previously, there was no phone type for this phone and you had to configure it as a Cisco IP Phone 7960.)

If you upgrade to Cisco CallManager release 3.3(3) SR1 and later, you can choose the Cisco 7920 phone type when adding the wireless phone. However, if you perform the upgrade and have Cisco wireless phones on your network that were previously configured as Cisco IP Phone 7960s, you will need to remove those

entries from the Cisco CallManager database and assign the Cisco 7920 phone type to these phones. See the "Re-registering the Phone Using the Cisco 7920 Phone Type" section on page 2-15 for details.

If you used auto-registration to register the Cisco Wireless IP Phone 7920 with Cisco CallManager 3.3 released prior to 3.3(3) SR1, you need to make the configuration files on the phone available to the Cisco CallManager so the phone can be registered with the Cisco 7920 phone type. See the "Using Auto-Registration Prior to Release 3.3(3)SR1" section on page 2-17 for details.

Re-registering the Phone Using the Cisco 7920 Phone Type

When you upgrade to Cisco CallManager version 3.3(3) SR1 and later, you might have Cisco Wireless IP Phone 7920s that were previously configured as Cisco IP Phone 7960s. If this is the case, you need to remove those phones from the Cisco CallManager database and assign the Cisco 7920 phone type to the Cisco Wireless IP Phone 7920 as follows:

Procedure

Step 1 Log in to the Cisco CallManager Administration application.

Step 2 From the menu bar, choose **System > Cisco CallManager**.

The Cisco CallManager Configuration window appears.

Step 3 Choose **Device > Phones**.

Step 4 Choose the records that match your Cisco Wireless IP Phone 7920s.

Step 5 Click **Delete** to delete the records.

All Cisco Wireless IP Phone 7920s will be deleted from the Cisco CallManager database.

Step 6 In the Cisco CallManager Configuration window, choose **Device > Add a New Device**.

The Add a New Device window appears.

Step 7 Select **Phone** from the Device Type drop-down menu and click **Next**.

The Add a New Phone window appears.

Step 8 Select the Cisco 7920 phone type from the drop-down menu and click **Next**.

The Phone Configuration window appears.

Step 9 In the Phone Configuration window, enter information in the following fields:

- MAC Address
- Domain Name associated with this MAC Address

Step 10 Click **Insert**.

The Cisco CallManager Administration application asks if you want to assign a directory number.

Step 11 Enter the required fields.

Note When you update the firmware image for the Cisco Wireless IP Phone 7920 in Cisco CallManager versions prior to release 3.3(3) SR1, you must assign the Cisco IP Phone 7960 phone type to the Cisco Wireless IP Phone 7920 when adding the phone through the Cisco CallManager Administration application.

Related Topics

- Adding Phones with Auto-Registration, page 2-16
- Adding Phones with Auto-Registration and TAPS, page 2-18
- Adding Phones with Cisco CallManager Administration, page 2-18
- Adding Phones with BAT, page 2-19

Adding Phones with Auto-Registration

You can add phones with auto-registration without first gathering MAC addresses from the phones.

When auto-registration is enabled, Cisco CallManager begins the automatic startup process to obtain a directory number. During auto-registration, Cisco CallManager automatically assigns the next available sequential directory number to the phone.

When you use this method, Cisco CallManager automatically assigns directory numbers to new phones as they register with Cisco CallManager.

You can use auto-registration to quickly enter phones into the Cisco CallManager database. You can then modify any settings, such as the directory numbers, from Cisco CallManager. Additionally, you can move auto-registered phones to new locations and assign them to different device pools without affecting their directory numbers.

Auto-registration is disabled by default.

For information about enabling and configuring auto-registration, refer to *Cisco CallManager Administration Guide*.

Using Auto-Registration Prior to Release 3.3(3)SR1

If you use auto-registration to register the Cisco Wireless IP Phone 7920 with Cisco CallManager 3.3 released prior to 3.3(3) SR1, you need to make the configuration files on the phone available to the Cisco CallManager so the phone can be registered with the Cisco 7960 phone type. If the configuration files are not available, the Cisco CallManager cannot auto-register the phone.

Use this procedure to enable the configuration files for Cisco CallManager releases prior to 3.3(3) SR1.

Procedure

Step 1 Log in to the Cisco CallManager Administration application.

Step 2 From the menu bar, choose **Service > Service Parameters**.

The Service Parameters Configuration page appears.

Step 3 In the Service drop-down list box, choose **Cisco TFTP**.

Step 4 Click the **Advanced** button.

Step 5 Scroll down on the page to Clusterwide parameters (Parameters that apply to all servers), and set the Enable Caching of Configuration Files parameter to **False**.

Step 6 Click the **Update** button.

Related Topics

- Adding Phones with Auto-Registration and TAPS, page 2-18
- Adding Phones with Cisco CallManager Administration, page 2-18
- Adding Phones with BAT, page 2-19

Adding Phones with Auto-Registration and TAPS

You can add phones with auto-registration and TAPS without first gathering MAC addresses from phones.

TAPS, the Tool for Auto-Registered Phones Support, works with the Bulk Administration Tool (BAT) to update phones that were already added to the Cisco CallManager database with dummy MAC addresses. Use TAPS to update MAC addresses and download pre-defined configurations for phones.

To implement TAPS, you or the end-user dial a TAPS directory number and follow voice prompts. When the process is complete, the phone will have downloaded its directory number and other settings, and the phone will be updated in Cisco CallManager Administration with the correct MAC address.

You must make sure that Auto-registration is enabled in Cisco CallManager Administration (System > Cisco CallManager) for TAPS to function.

Refer to *Bulk Administration Tool User Guide for Cisco CallManager* for detailed instructions about BAT and about TAPS.

Related Topics

- Adding Phones with Auto-Registration, page 2-16
- Adding Phones with Cisco CallManager Administration, page 2-18
- Adding Phones with BAT, page 2-19

Adding Phones with Cisco CallManager Administration

You can add phones individually to the Cisco CallManager database using Cisco CallManager Administration. To do so, you first need to obtain the MAC address for each phone. See the "Determining the MAC Address of a Cisco IP Phone" section on page 2-13 for instructions.

After you have collected MAC addresses, choose **Device > Add a New Device** in Cisco CallManager Administration to begin.

For additional instructions and conceptual information about Cisco CallManager, refer to *Cisco CallManager Administration Guide* and to *Cisco CallManager System Guide*.

Related Topics

- Determining the MAC Address of a Cisco IP Phone, page 2-13
- Adding Phones with Auto-Registration, page 2-16
- Adding Phones with Auto-Registration and TAPS, page 2-18
- Adding Phones with BAT, page 2-19

Adding Phones with BAT

The Cisco Bulk Administration Tool (BAT) is a plug-in application for Cisco CallManager that enables you to perform batch operations, including registration, on multiple phones.

To add phones using BAT only (not in conjunction with TAPS), you first need to obtain the appropriate MAC address for each phone. See the "Determining the MAC Address of a Cisco IP Phone" section on page 2-13 for instructions.

Note When using BAT to add Cisco Wireless IP Phones, use the default setting for the phone load. The phone load name includes symbols (-, _, .) and BAT does not permit symbols in an entry.

For detailed instructions about using BAT, refer to *Cisco CallManager Administration Guide* and to *Bulk Administration Tool Guide for Cisco CallManager.*

Related Topics

- Determining the MAC Address of a Cisco IP Phone, page 2-13
- Adding Phones with Auto-Registration, page 2-16
- Adding Phones with Auto-Registration and TAPS, page 2-18
- Adding Phones with Cisco CallManager Administration, page 2-18

Setting Up the Cisco Wireless IP Phone 7920

This chapter includes the following topics that help you install the Cisco Wireless IP Phone 7920 on an IP telephony network:

- Before You Begin, page 3-1
- Providing Power to the Cisco IP Phone, page 3-9
- Powering On the Wireless IP Phone 7920, page 3-16

Note Before you install a Cisco Wireless IP Phone 7920, you must make some critical decisions about how to configure the phone in your network. Then, you can install the phone and verify its functionality. For more information, see Chapter 2, "Preparing to Install the Cisco Wireless IP Phone 7920 on Your Wireless Network."

Before You Begin

Before installing the Cisco Wireless IP Phone, review these sections:

- Network Requirements, page 3-2
- Cisco CallManager Configuration, page 3-2
- Wireless Network and Access Point Configuration, page 3-3
- Safety and Performance Information, page 3-5

Network Requirements

For the Cisco Wireless IP Phone 7920 to successfully operate as a Cisco IP Phone endpoint in your network, your network must meet the following requirements:

- Working VoIP Network
  - Voice over IP (VoIP) configured on your Cisco routers and gateways
  - Cisco CallManager Release 3.3(3) SR1 or higher installed in your network and configured to handle call processing

Note You can use the Cisco Wireless IP Phone 7920 with Cisco CallManager 3.2, but you must configure the phone as a Cisco IP Phone 7960 device type. See the "Support for the Cisco 7920 Phone Type" section on page 2-14.

- IP network that supports DHCP or manual assignment of IP address, gateway, and subnet mask
- Working Wireless Network
  - Voice over WLAN configured on your Cisco Aironet Access Points
  - Security implemented for authenticating wireless voice users

Related Topics

- Cisco CallManager Configuration, page 3-2
- Wireless Network and Access Point Configuration, page 3-3
- Safety and Performance Information, page 3-5

Cisco CallManager Configuration

The Cisco IP Phone requires Cisco CallManager to handle call processing. Refer to *Cisco CallManager Administration Guide* or context-sensitive help in the Cisco CallManager Administration application to ensure that Cisco CallManager is set up properly to manage the phone and to properly route and process calls.

Table 3-1 explains and provides references for many of the configuration activities for which you use Cisco CallManager Administration.

Table 3-1 Cisco CallManager Configuration Tasks

Activity	Explanation	Reference
Auto-registration.	If you plan to use auto-registration, verify that it is enabled and properly configured in Cisco CallManager before connecting any Cisco IP Phone to the network.	See the "Adding Phones to the Cisco CallManager Database" section on page 2-13.
Configure and assign telephony features.	You must use Cisco CallManager Administration to configure and assign telephony features to the Cisco IP Phones.	See the "Configuring Telephony Features Using Cisco CallManager Administration" section on page 7-2.
Add and associate users.	In Cisco CallManager Administration, you can add users to the database and associate them with specific phones. In this way, users gain access to web pages that allow them to configure phone options such as call forwarding and speed dialing.	See the "Adding Users to Cisco CallManager" section on page 7-6.

Related Topics

- Network Requirements, page 3-2
- Wireless Network and Access Point Configuration, page 3-3
- Safety and Performance Information, page 3-5

Wireless Network and Access Point Configuration

This section identifies key access point (AP) configuration options that are required for optimal voice performance. This is not a complete list of configuration steps or options for installing a Cisco Aironet Access Point. For more information about configuring your AP, refer to the appropriate *Cisco Aironet Access Point Installation and Configuration Guide* for your model.

When configuring a wireless voice LAN, Cisco recommends that APs must run Cisco IOS version 12.2(15)JA or later. The recommended APs that run IOS include the following:

- Aironet 350 series
- Aironet 1100 series
- Aironet 1200 series

Table 3-2 explains and provides references for many of the configuration activities for the Cisco Aironet Access Point.

Table 3-2 Cisco Aironet AP Configuration Tasks

Activity	Explanation	Reference
Check that the Cisco IOS version is the recommended version	Under System Software, check for Cisco IOS version 12.2(15)JA or later.	Refer to the *Wireless 7920 Design and Deployment Guide* Interacting with the Cisco Aironet Access Point, page 2-2
Configure an auxiliary VLAN for voice	To isolate voice traffic and enable QoS, you need a separate voice VLAN on the AP and network switch.	Refer to the *Wireless 7920 Design and Deployment Guide* Voice Quality in a Wireless Network, page 2-5
Configure Service Set Identifier (SSID) for each VLAN	Identifier for a set of wireless devices to communicate with each other. Several APs can have the same SSID to support a group of wireless phones.	Refer to the *Wireless 7920 Design and Deployment Guide* Interacting with the Cisco Aironet Access Point, page 2-2
Configure QoS settings for VLANs	Create a QoS policy for the Voice VLAN and assign a higher CoS to voice traffic. Enable the QoS element for Wireless Phones to provide channel utilization information to phones.	Refer to the *Wireless 7920 Design and Deployment Guide* Voice Quality in a Wireless Network, page 2-5
Enable ARP Caching	Enable this option to ensure two-way audio. The AP has ARP caching disabled by default.	Refer to the *Wireless 7920 Design and Deployment Guide*

Table 3-2 Cisco Aironet AP Configuration Tasks (continued)

Activity	Explanation	Reference
Configure radio (802.11b) settings	Data Rate—Allow only 11Mbps Transmit Power—Use the same setting as the Cisco Wireless IP Phone 7920 (20mW) Default Radio Channel—Set a specific radio channel, do not use "Least congested channel" option.	Refer to the *Wireless 7920 Design and Deployment Guide*
Configure Security for the voice VLAN	Use one of the following types of security for authentication and encryption: • Static WEP using either 40-bit or 128 bit encryption • LEAP using a RADIUS server.	Refer to the *Wireless 7920 Design and Deployment Guide* Security Mechanisms in the Wireless Network, page 2-6

Related Topics

- Network Requirements, page 3-2
- Cisco CallManager Configuration, page 3-2
- Safety and Performance Information, page 3-5

Safety and Performance Information

Review the following warnings before installing the Cisco IP Phone. To see translations of these warnings, refer to the *Regulatory Compliance and Safety Information for the Cisco Wireless IP Phone 7920* document that accompanied this device.

Warning **This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for**

preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

Warning **Read the installation instructions before connecting the system to the power source.** Statement 1004

Warning **This equipment will not be able to access emergency services during a power outage because of reliance on utility power for normal operation. Alternative arrangements should be made for access to emergency services. Access to emergency services can be affected by any call-barring function of this equipment.**

Warning **Do not use the Cisco Wireless IP Phone 7920 in hazardous environments such as areas where high levels of explosive gas may be present. Check with the site safety engineer before using any type of wireless device in such an environment.**

Warning **The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.** Statement 1019

Warning **This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.** Statement 1045

Warning **The power supply must be placed indoors.** Statement 331

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

Battery Safety Notices

These battery safety notices apply to the batteries that are approved by the Cisco Wireless IP Phone 7920 manufacturer.

Warning **There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.** Statement 1015

Warning **Do not dispose of the battery pack in fire or water. The battery may explode if placed in the fire.**

Caution The battery pack is intended for use only with this device.

Caution Do not disassemble, crush, puncture, or incinerate the battery pack.

Caution To avoid risk of fire, burns, or damage to your battery pack, do not allow a metal object to touch the battery contacts.

Caution Handle a damaged or leaking battery with extreme care. If you come in contact with the electrolyte, wash the exposed area with soap and water. If the electrolyte has come in contact the eye, flush the eye with water for 15 minutes and seek medical attention.

Caution Do not charge the battery pack if the ambient temperature exceeds 104 degrees Fahrenheit (40 degrees Celsius).

Caution Do not expose the battery pack to high storage temperatures (above 140 degrees Fahrenheit, 60 degrees Celsius).

Caution When discarding a battery pack, contact your local waste disposal provider regarding local restrictions on the disposal or recycling of batteries.

Caution To obtain a replacement battery, contact your local dealer. Use only the batteries that have a Cisco part number.
Standard battery—CP-BATT-7920-STD
Extended battery—CP-BATT-7920-EXT

Caution Only use the Cisco power supply that was provided with your phone. If you need to replace your power supply, refer to the list of Cisco part numbers.
North America—CP-PWR-7920-NA
Central Europe—CP-PWR-7920-CE
United Kingdom—CP-PWR-7920-UK
China—CP-PWR-7920-CN
Japan—CP-PWR-7920-JP

To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information for the Cisco Wireless IP Phone 7920* document that accompanied this product.

Related Topics

- Network Requirements, page 3-2
- Cisco CallManager Configuration, page 3-2
- Wireless Network and Access Point Configuration, page 3-3

Providing Power to the Cisco IP Phone

The Cisco Wireless IP Phone 7920 uses a battery for power. This section includes the following information about installing and charging the battery:

- Installing the Battery, page 3-9
- Power Supply for Charging the Battery, page 3-11
- Charging the Phone Battery, page 3-12
- Using the Desktop Charger, page 3-13

Installing the Battery

The Cisco Wireless IP Phone 7920 uses a battery for power. You can choose between these two battery models:

- Standard
- Extended

Battery Design

Table 3-3 describes the types of batteries available for the Cisco Wireless IP Phone 7920.

Table 3-3 Batteries Available for the Cisco Wireless IP Phone 7920

Type	Technology	Capacity	Talk Time	Standby Time
Standard	Lithium-ion	1440/1560 mAh	3.5 hr	21 hr
Extended	Lithium-ion	1960 mAh	4.25 hr	30 hr

Note Standard batteries might be either 1440 mAh or 1560 mAh capacity.

To install the battery in the Cisco Wireless IP Phone, perform the following steps. See Figure 3-1 for graphical overviews of these steps.

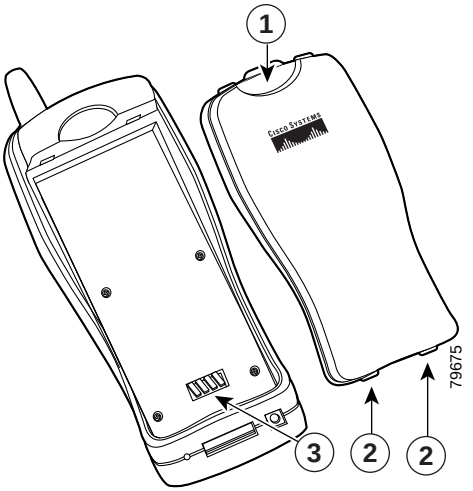
Procedure

Step 1 Insert the battery catches (as shown in Figure 3-1) in the corresponding slots at the bottom of the Cisco Wireless IP Phone 7920. Make sure that the metal contacts on the battery and the phone are facing each other.

Step 2 Press the battery to the body of the phone until it locks into place.

Step 3 To remove the battery, press down on the locking catch, then lift and remove the battery.

Figure 3-1 Cisco Wireless IP Phone 7920 Battery Installation



1	Locking catch—Press to release the battery
2	Catches—Insert these into the slots near the bottom of the phone at battery installation.
3	Metal contact—Match the contact on the battery to the contact on the phone.

Note The media access control (MAC) address for each Cisco Wireless IP Phone 7920 appears on a printed label on the back of the phone underneath the battery.

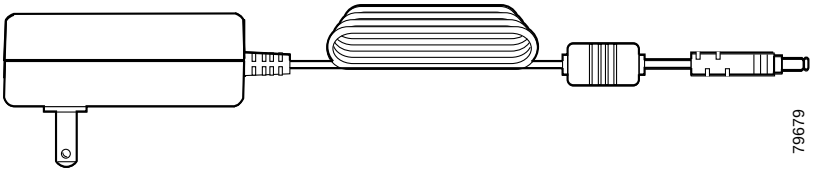
Related Topics

- Power Supply for Charging the Battery, page 3-11
- Charging the Phone Battery, page 3-12
- Using the Desktop Charger, page 3-13

Power Supply for Charging the Battery

The AC adapter shown in Figure 3-2 enables you to charge your phone battery quickly. To use the adapter, plug it into a wall outlet, and insert the connector into the base of your Cisco Wireless IP Phone 7920 or to the back of the desktop charger. You can use the phone while the battery is being charged.

Figure 3-2 Power Supply



The charging time for the two types of batteries is shown in Table 3-4. Check the charging status on the phone display or on the front of the desktop charger. You can stop charging the battery when the battery is fully charged, and you can leave the batteries in the charger for extended time periods will no ill affects.
Lithium ion batteries can be partially charged without shortening the battery life, because they have no memory. Batteries should handle up to 4000 recharges.

Table 3-4 Charging Time Information

Battery Type	Power Supply Connected to Phone	Power Supply Connected to Desktop Charger
Standard	3.5 hr	6 hr
Extended	4.5 hr	8.5 hr

Related Topics

- Installing the Battery, page 3-9
- Charging the Phone Battery, page 3-12
- Using the Desktop Charger, page 3-13

Charging the Phone Battery

The Cisco Wireless IP Phone 7920 is powered by a rechargeable Lithium ion battery. To charge the battery, follow these steps.

Procedure

Step 1 Connect the cable from the power supply to the outlet in the phone.

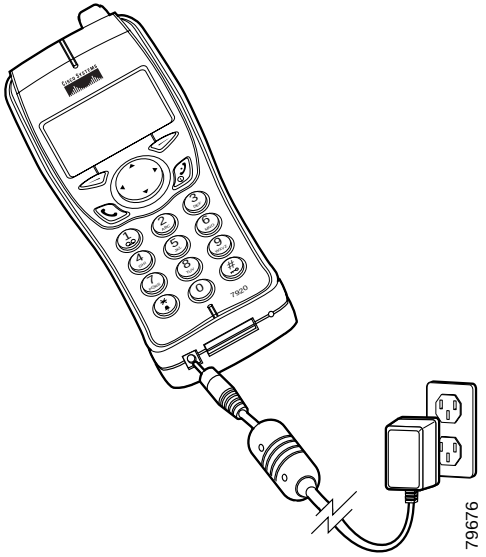
Step 2 Connect the power supply to an AC wall outlet as shown in Figure 3-3.

If the phone is turned off, the screen displays the message, “Battery Charging.” When the battery is charged, “Battery Full” displays.

If the phone is turned on, the battery indicator bar blinks, displaying the current power level. When the battery is charged, the indicator bar stops blinking, and “Charging Complete” displays.

Step 3 When the battery is fully charged, you can disconnect the charger from the phone, and unplug the power cord from the AC wall outlet.

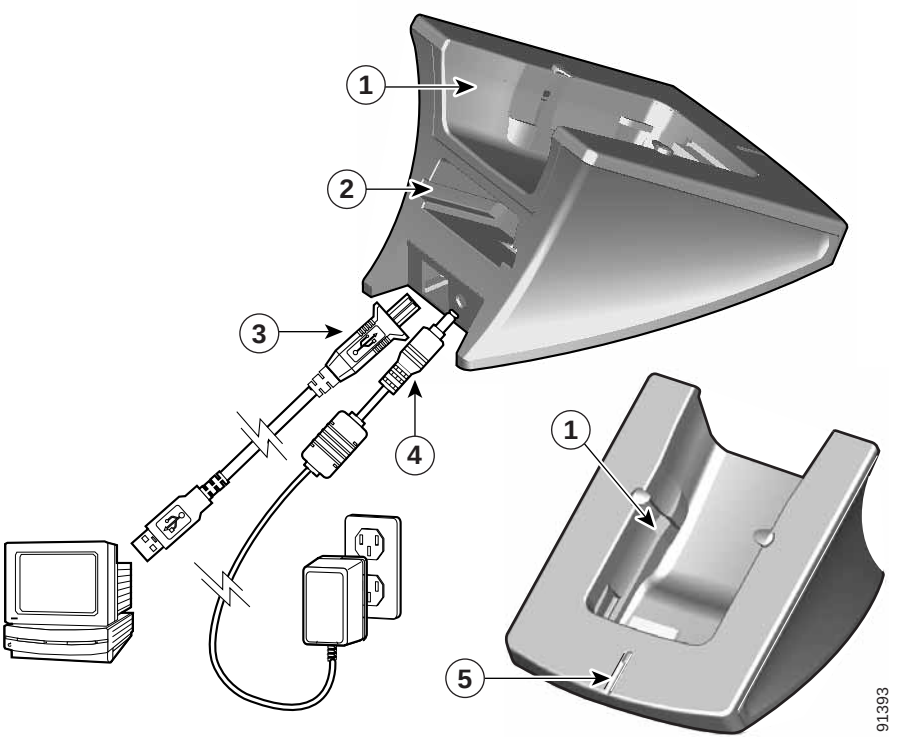
Figure 3-3 Charging the Phone Battery



Using the Desktop Charger

The desktop charger, shown in Figure 3-4, can charge both the phone battery installed in the phone and an extra battery at the same time.

Figure 3-4 Desktop Charger



1	Upper compartment—For the phone	**4**	AC adapter—Plugs into wall outlet
2	Lower compartment—For the battery	**5**	LED indicator—Indicates battery charging status
3	USB A-type to B-type cable—Connects phone to the PC		

To use the desktop charger, see Figure 3-4 and follow these steps:

Procedure

Step 1 Plug the AC adapter into a wall outlet, and insert the connector (4) into the back of the desktop charger.

Step 2 Insert the Cisco Wireless IP Phone 7920 into the upper compartment (1) of the charger.

Step 3 Insert the spare battery into the lower compartment (2).

Note You can insert and charge the phone with a battery installed alone. Or you can insert and charge the spare battery alone. Or you can charge both the phone and the spare battery at the same time.

The LED indicator (5) turns red when the battery is charging. The indicator turns green when the battery charging is complete. Batteries will stop charging after they are fully charged. You can leave the phone or batteries in the charger for extended periods of time with no problems.

Table 3-5 gives the battery charging time information. Check the LED indicator for the charging status. You can stop charging the battery when the battery is fully charged.

Table 3-5 Battery Charging Time and Charging Configuration

Battery Charging Configuration	Charging Time
Battery alone	6 hr
Battery installed in the phone	3.5 hr
Both battery installed in the phone and an extra battery	6 hr

Note To use the Cisco 7920 Configuration Utility to import or export settings while charging the Cisco Wireless IP Phone 7920 and the battery, connect the desktop charger and your PC with the standard USB A-type to B-type cable, as indicated

by callout 3 in Figure 3-4. You must enable the USB port on the Cisco Wireless IP Phone. For more information, see the "Installing the USB Driver" section on page 4-5.

Related Topics

- Powering On the Wireless IP Phone 7920, page 3-16
- Installing the Battery, page 3-9
- Charging the Phone Battery, page 3-12
- Installing the USB Driver, page 4-5

Powering On the Wireless IP Phone 7920

After the battery for the Cisco Wireless IP Phone 7920 is charged, you can start up the phone. Use the following sections for more information about starting up the phone.

- Active and Standby Phone Modes, page 3-17
- Startup Settings for a Network Without DHCP, page 3-18

To power on the Cisco Wireless IP Phone 7920, you can press and hold the Power On button for two to three seconds and the phone begins its startup process by cycling through the following steps.

In a Cisco Light Extensible Authentication Protocol (LEAP) environment, you might have to set the LEAP password.

1. The LCD screen displays the Cisco Systems, Inc., copyright screen.
2. The LCD screen displays these messages as the phone starts up:
   - Authenticating with AP
   - Configuring IP network
   - Downloading load ID
   - Downloading config file
   - Connecting to CallManager
   - Registering to CallManager

3. The following information displays on the main LCD screen:
   - Current time and date
   - Primary directory number
   - Greeting message
   - Softkey labels

When the phone passes through these stages with no errors, the phone started up properly. Now the phone is in standby mode and is ready to place or receive calls.

The signal icon in the upper right corner shows the strength of the signal between the wireless access point and the phone. The phone must have an adequate signal to successfully place or receive calls. The icon displays six vertical bars for a strong signal. If the signal icon displays fewer than three bars, the weak signal will cause problems with phone performance.

Note When the phone receives a weak signal, the phone displays this warning message, "Weak signal detected" and sends a warning tone as specified in the Normal profile. For information about changing warning tones, refer to the "Using and Changing Profiles" chapter in the *Cisco Wireless IP Phone 7920 Guide*.

If the phone does not complete these steps successfully, see the "Resolving Startup and Connectivity Problems" section on page 9-2.

Related Topics

- Active and Standby Phone Modes, page 3-17
- Startup Settings for a Network Without DHCP, page 3-18

Active and Standby Phone Modes

When the Cisco Wireless IP Phone 7920 is powered on, it can be in one of two modes.

Active mode—The phone is in an active call, is scanning for channels, is sending CDP packets or keep-alive messages, or is reregistering with Cisco CallManager in active mode. As long as there is an active RTP stream, the phone remains in active mode and consumes power. The standard battery provides 3 hours of talk time in active mode and the extended battery provides 4.25 hours of talk time.

Standby mode—The phone goes into standby mode after a minute or so of idle time as a way of preserving battery life. The phone enters standby mode two seconds after a scan is complete. The standard battery provides 21 hours of standby time and the extended battery provides 30 hours of standby time.

The phone will awake from standby mode in response to these events:

- Key pad activity
- Roaming
- Power cycling the phone
- Losing network connectivity
- Losing RF connectivity
- Transmitting scheduled CDP or keep-alive packets.

Related Topics

- Startup Settings for a Network Without DHCP, page 3-18
- Resolving Startup and Connectivity Problems, page 9-2

Startup Settings for a Network Without DHCP

If you are not using DHCP in your network, you must configure these network settings on the Cisco Wireless IP Phone 7920:

- IP address
- Subnet mask
- Primary TFTP server IP address
- Primary gateway IP address
- Primary DNS server IP address (optional)

Collect this information and follow the procedures defined in Chapter 5, “Configuring Network Settings on the Cisco Wireless IP Phone 7920.”

Related Topics

- Understanding the Phone Startup Process, page 2-9
- Resolving Startup and Connectivity Problems, page 9-2

Using the Cisco 7920 Configuration Utility

This chapter describes how to use the Cisco 7920 Configuration Utility that is installed on a computer to configure network and phone settings for the Cisco Wireless IP Phone 7920. The following sections introduce how to install and use the utility:

- Overview of the Cisco 7920 Configuration Utility, page 4-1
- How to Install the Cisco 7920 Configuration Utility, page 4-4
- Overview of the Application Windows, page 4-8
- How to Use the Cisco 7920 Configuration Utility, page 4-15
- Configuration File Format, page 4-29

You can also configure network settings on the Cisco Wireless IP Phone 7920 by using the Network Configuration menu. See Chapter 5, “Configuring Network Settings on the Cisco Wireless IP Phone 7920” and Chapter 6, “Configuring the Wireless Network Settings on the Cisco Wireless IP Phone 7920.”

Overview of the Cisco 7920 Configuration Utility

This section provides the following information about the Cisco 7920 Configuration Utility

- Description of the Cisco 7920 Configuration Utility, page 4-2
- System Requirements, page 4-2

Description of the Cisco 7920 Configuration Utility

The Cisco 7920 Configuration Utility is a PC-based application that enables you to configure following types of settings on the Cisco Wireless IP Phone 7920.

- System Parameters
- RF Network
- Network Security
- Phone Settings
- Phone Lock Password

You must connect the PC to the phone by using a USB cable. When the Cisco 7920 Configuration Utility is started, the current configuration in the Cisco Wireless IP Phone displays. You can view the current configuration and modify it by entering new values in the Cisco 7920 Configuration Utility windows.

To quickly configure phones, you can create and save a configuration file with typical network and phone settings, and then export the file to several phones. In addition, you can choose to upload new firmware to the phone when phone settings are exported.

Related Topics

- System Requirements, page 4-2
- How to Install the Cisco 7920 Configuration Utility, page 4-4
- Overview of the Application Windows, page 4-8
- How to Use the Cisco 7920 Configuration Utility, page 4-15

System Requirements

To install and run the Cisco 7920 Configuration Utility, your computer must meet the following hardware and software requirements.

Hardware Requirements

To install the Cisco 7920 Configuration Utility, your computer must meet the following requirements:

- An IBM-compatible personal computer (PC) that runs Microsoft Windows
- A CD-ROM drive
- A USB port and cable
- A keyboard and mouse or other pointing device

Software Requirements

To run the Cisco 7920 Configuration Utility, you must have one of the following versions of Microsoft Windows installed and configured on the PC:

- Windows 98 (Second Edition)
- Windows ME
- Windows 2000 Professional (SP1 or later)
- Windows XP (Home Edition or Professional)

In addition, you need to install the following software:

- USB driver for TCP/IP for the installed version of Windows
- Cisco Wireless IP Phone 7920 firmware
- Cisco 7920 Configuration Utility

Related Topics

- Description of the Cisco 7920 Configuration Utility, page 4-2
- How to Install the Cisco 7920 Configuration Utility, page 4-4
- Installing the USB Driver, page 4-5

How to Install the Cisco 7920 Configuration Utility

This section describes how to install the Cisco 7920 Configuration Utility and its components:

- Installing the Cisco 7920 Configuration Utility, page 4-4
- Installed Files, page 4-4
- Installing the USB Driver, page 4-5
- Network Connection for the Cisco 7920 Configuration Utility, page 4-7
- Overview of the Application Windows, page 4-8

Installing the Cisco 7920 Configuration Utility

To install the Cisco 7920 Configuration Utility, follow these steps:

Procedure

Step 1 Insert the Cisco 7920 Configuration Utility CD into the CD-ROM drive.

Step 2 Double-click the **setup.exe** file on the Cisco 7920 Configuration Utility CD. The InstallShield Wizard window appears.

Step 3 The InstallShield Wizard provides step-by-step instructions that guide you through the installation process. Click **Next** to continue, and follow the on-screen instructions.

Step 4 Click **Finish** when the installation is completed.

Installed Files

During installation, the following files are copied to your specified location:

- Cisco7920.exe: Main executable program
- Cisco7920.pdf: *Cisco 7920 Administrator Guide*
- Expat.dll: XML parser

- <Cisco 7920 USB>: USB Driver for the Cisco Wireless IP Phone 7920

Note Write down the path for the USB driver because you will need to specify this path during the USB driver installation.

Uninstalling the Cisco 7920 Configuration Utility

If you need to uninstall the Cisco 7920 Configuration Utility, use the Add/Remove Programs application in Windows Control Panel.

Related Topics

- Installing the USB Driver, page 4-5
- Network Connection for the Cisco 7920 Configuration Utility, page 4-7

Installing the USB Driver

After installing the Cisco 7920 Configuration Utility, you need to install the USB driver so that your computer and the Cisco Wireless IP Phone 7920 can communicate by using the USB port and cable.

To install the USB driver, follow these steps:

Procedure

Step 1 Power on the Cisco Wireless IP Phone 7920.

Step 2 To enable the USB port, press the **Menu** softkey, then select **Phone Settings** > **Enable/Disable USB Port** > **Enable**.

Step 3 Connect the USB cable from the computer to the Cisco Wireless IP Phone 7920.

For users running Windows 98, Windows ME, and Windows 2000, the USB driver is automatically installed, and you can proceed to Step 5.

For users running Windows XP, continue to Step 4 to manually install the USB driver.

Step 4 The Found New Hardware Wizard window appears. Specify the directory in which the USB driver files are located, and click **Next** to continue.

Step 5 After the wizard finds the driver for the USB device, click **Next** to install the driver. When the USB driver has been installed, click **Finish** to close the wizard window.

Step 6 After the USB driver is installed, a network adapter named *Cisco 7920 USB* appears in the Device Manager window.

Note For users running Windows 2000 and Windows XP, the USB installation is complete and the Cisco 7920 Configuration Utility will assign a private IP address for the Cisco 7920 USB. These users can skip the rest of this procedure.

Users running Windows 98 and Windows ME should continue to Step 7.

Step 7 At the desktop, right-click the **Network Neighborhood** icon. Then choose **Properties** from the pop-up menu. The Network and Dialup Connections window appears.

In the Network and Dialup Connections window, right-click the **Cisco 7920 USB connection** icon. Choose **Properties** from the pop-up menu.

Step 8 In the Local Area Connection Properties window, on the General tab, under Components Checked Are Used by This Connection, click **Internet Protocol (TCP/IP)**. Click the **Properties** button.

Step 9 In the Internet Protocol (TCP/IP) Properties window, click the **Use the following IP address** radio button. Enter the IP address in the IP Address field, and enter the subnet mask address in the Subnet Mask field.

Note

- The Configuration Utility has limited DHCP server capabilities. If the USB interface of the Cisco Wireless IP Phone 7920 is set to DHCP, the IP address should be 192.168.1.X to allow network communication between the Cisco 7920 Wireless IP Phone and the PC.
- Configure the Internet Protocol for the USB adapter with a static IP address from 192.168.1.2 to 192.168.1.254.
- Configure the subnet mask as 255.255.255.0.
- The reserved IP address for the Cisco 7920 Wireless IP Phone is 192.168.1.1 and the port number is 5001.

Step 10 Click **OK** to close the Internet Protocol (TCP/IP) Properties window.

Step 11 Reboot the system. After the system has finished rebooting, reconnect the Cisco 7920 Wireless IP Phone to your computer.

Note Windows 98 users might see a duplicated network adapter named *Cisco 7920 USB driver* in the Device Manager window. Delete this entry.

Related Topics

- Installing the Cisco 7920 Configuration Utility, page 4-4
- Network Connection for the Cisco 7920 Configuration Utility, page 4-7

Network Connection for the Cisco 7920 Configuration Utility

When you launch the Cisco 7920 Configuration Utility from your PC, an attempt is made to connect to the 192.168.1.x network through the USB interface. If your wireless network is utilizing the 192.168.1.x network, the USB adapter might fail to load after you enable the USB on the Cisco Wireless IP Phone 7920. You need to disable network connectivity between the PC and the 192.168.1.x network. By changing the 802.11b parameters for the Cisco Wireless IP Phone 7920, the phone does not authenticate and retrieve an IP address of 192.168.1.x.

To ensure there is no network connectivity between the PC and the 192.168.1.x network, use the following procedure on the Cisco Wireless IP Phone 7920.

Procedure

Step 1 Choose **Network Config > 802.11b Configuration > Wireless Settings**,

Step 2 Change either the Service Set Identifier (SSID) or the authentication mode.

Step 3 Power off the phone.

Step 4 Power on the phone.

Step 5 Enable the USB again.

Step 6 Use the Cisco 7920 Configuration Utility to modify the phone settings as necessary.

Step 7 Reset and activate the 802.11 parameters that were changed in Step 2.

Related Topics

- Installing the Cisco 7920 Configuration Utility, page 4-4
- Installing the USB Driver, page 4-5
- Overview of the Application Windows, page 4-8
- How to Use the Cisco 7920 Configuration Utility, page 4-15

Overview of the Application Windows

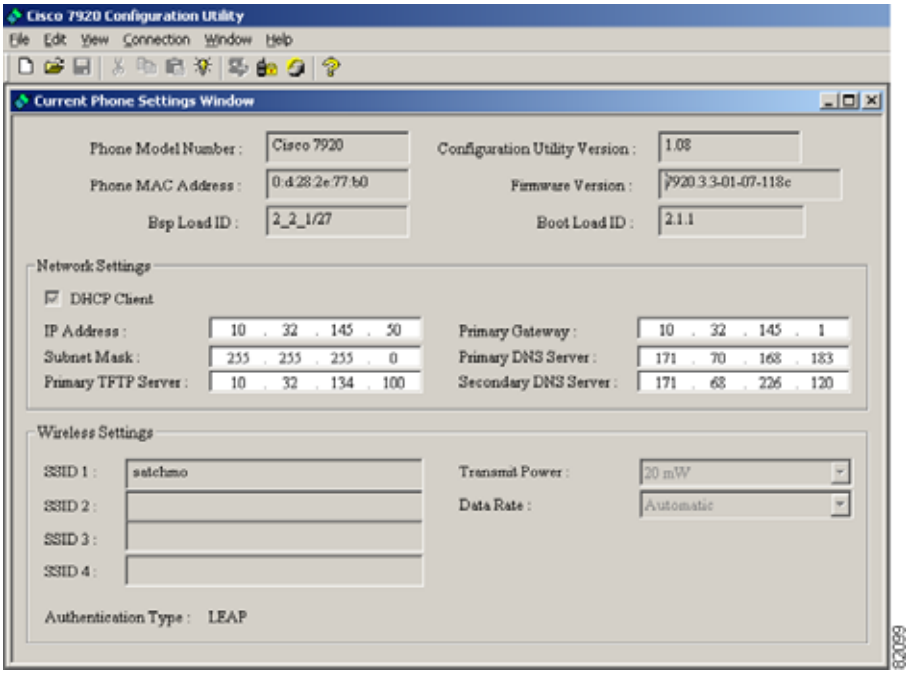
This section describes the user interface and menu options of the Cisco 7920 Configuration Utility and includes the following topics:

- Current Phone Settings Window, page 4-8
- Log History Window, page 4-9
- Connection Status Bar, page 4-10
- Using the File Menu, page 4-11
- Using the Edit Menu, page 4-11
- Using the View Menu, page 4-12
- Using the Connection Menu, page 4-12

Current Phone Settings Window

The Current Phone Settings window, as shown in Figure 4-1, appears in the Main window when the Configuration Utility is started and connected to a phone.

Figure 4-1 Cisco 7920 Configuration Utility - Current Phone Settings Window


Cisco 7920 Configuration Utility
File Edit View Connection Window Help
Current Phone Settings Window
Phone Model Number : Cisco 7920
Configuration Utility Version : 1.08
Phone MAC Address : 0:d:28:2e:77:b0
Firmware Version : 7920.3.3-01-07-118c
Bsp Load ID : 2_2_1/27
Boot Load ID : 2.1.1
Network Settings
DHCP Client
IP Address : 10 . 32 . 145 . 50
Primary Gateway : 10 . 32 . 145 . 1
Subnet Mask : 255 . 255 . 255 . 0
Primary DNS Server : 171 . 70 . 168 . 183
Primary TFTP Server : 10 . 32 . 134 . 100
Secondary DNS Server : 171 . 68 . 226 . 120
Wireless Settings
SSID 1 : satchmo
Transmit Power : 20 mW
SSID 2 :
Data Rate : Automatic
SSID 3 :
SSID 4 :
Authentication Type : LEAP
80099

The phone settings for the connected phone display in the Current Phone Settings window. You can modify the phone settings by choosing **Edit > Settings Wizard**. The Current Phone Settings window is updated when the Import or the Export function is executed. For more information, see the "How to Use the Cisco 7920 Configuration Utility" section on page 4-15.

Log History Window

When you start the Cisco 7920 Configuration Utility, the Log History window is empty. It immediately begins to log the event types and operations. The history log is saved to the computer disk every time you exit the Configuration Utility.

Upon exiting, you are prompted to choose a default log filename, *logHistory.txt*, or to enter a different filename.

Log files are ASCII-based. You can read a log file by using a simple ASCII text editor. Log files contain the parts identified in Table 4-1.

Table 4-1 Log File Information

Items	Possible Value
Time	mm.dd.yyyy / hh.mm.ss (PC local time)
Phone MAC	The phone Media Access Control (MAC) address
Type	• Import • Export • Configuration
Operation	Import Type—Import settings Export Type: • Export settings with the exported configuration file • Upload firmware image with the uploaded configuration file and phone model number Configuration Type: • "Save" with the related configuration filename • "Save As" with the related configuration filename • "Open" with the related configuration filename

Note The existing entries in the log history are not deleted or overwritten by the new log entries. The new log entries are appended to the saved log file.

Connection Status Bar

When you log into a phone by using the Connection menu option, you can monitor the status of the connection. On the left side of the status bar, the LED indicator shows the current connection status as described in Table 4-2.

Table 4-2 Connection Status

LED Indicator	Operation	Description
	Choose **Connection** > **Login**. Choose the Import, Export, or Upload Firmware Image option.	The phone is in connecting status. Connection is in progress when executing the Import, Export, or Upload Firmware Image option.
	Choose **Connection** > **Login** from the menu bar.	The phone is online, and a connection is established. User can execute the Import, Export, and Upload Firmware Image options.
	Choose **Connection** > **Logout**. Disconnect the USB cable.	The phone is offline. User cannot execute Import, Export, or Upload Firmware Image options.

Using the File Menu

The File menu provides the following standard Windows options:

- New—Open a new configuration file for a phone.
- Open—Locate and open an existing configuration file.
- Save—Save changes to the configuration file.
- Save As—Save changes and give the configuration file a filename.
- Exit—Close the application

Using the Edit Menu

The Edit menu provides the following standard Windows editing options:

- Cut
- Copy
- Paste

In addition, the Edit menu provides access to the following options:

- Settings Wizard—A step-by-step guide for configuring the phone
- Change Admin Password

Using the View Menu

When the Cisco 7920 Configuration Utility is started, the Current Phone Settings window and the Log History window appear automatically. You can use the View menu to toggle between these windows:

- Current Phone Settings
- Log History
- Toolbar
- Status Bar

Using the Connection Menu

The Connection Menu enables you to perform these tasks with the Cisco 7920 Configuration Utility:

- Logging In, page 4-12
- Changing the Administrator Password, page 4-13
- Logging Out, page 4-13
- Uploading the Firmware Image, page 4-14
- Resetting to Factory Default, page 4-14

Logging In

You must log in to the phone to import, export, or upload firmware. Choose **Connection > Login**. The default usernames and passwords are as shown in Table 4-3.

Table 4-3 Default Username and Passwords

Username	Password	Authentication
Admin	cisco	By Configuration Utility
User	12345	By Cisco Wireless IP Phone 7920

Note The default user password can be used to unlock a phone if the user has not changed the keylock password.

Administrators are highly encouraged to change the Admin password when bringing up the system for the first time.

Changing the Administrator Password

You need to log in with administrator privileges before you can change the administrator password. Follow these steps to change the administrator password:

Procedure

Step 1 Choose **Edit > Change Admin Password** to bring up the Change Admin Password window.

Step 2 In the New Password field, enter the new password.

Step 3 In the Verify New Password field, enter the new password.

Step 4 Click **OK**.

Logging Out

Logging out disconnects the Cisco Wireless IP Phone 7920 from the PC. You will not be able to import settings from the phone, to export configuration files, or to upload the firmware image to the phone.

When you disconnect the USB cable, you are logged out automatically. If you switch to another phone in the On-Line mode, you are logged out of the configuration Utility automatically. To log out, follow these steps.

Step 1 From the menu bar, choose **Connection > Logout**.

The Logout window appears.

Step 2 Click **Yes** to confirm that you wish to log out.

Uploading the Firmware Image

The Upload Firmware Image window allows you to specify a firmware image filename and to upload the file to the Cisco Wireless IP Phone 7920.

You need to log in before choosing the **Connection > Upload Firmware Image**.

After the firmware image is uploaded, the Cisco Wireless IP Phone 7920 will reboot automatically. You need to log in again to continue configuring the Cisco 7920 Wireless IP Phone with the Cisco 7920 Configuration Utility. The history log records the uploading firmware image event.

Caution Be sure that the firmware image version in Cisco CallManager is the same as the firmware version that you uploaded to the phone. If the firmware version is different in the Cisco CallManager server, the next time the phone connects to Cisco CallManager, the phone gets that firmware version downloaded from Cisco CallManager.

Resetting to Factory Default

When you restore the settings to factory default values, all the settings in the Cisco Wireless IP Phone 7920 are restored to the original settings, including Call History, and Profiles settings. All Speed Dial settings are removed; however, the data stored in the Phone Book is preserved. After resetting to factory defaults, you must reconfigure your custom network settings by using the Settings Wizard. See "Using the Settings Wizard" section on page 16 for more information.

Choose **Connection > Restore to Factory Default.** After the factory default settings are restored, the Cisco Wireless IP Phone 7920 powers down automatically.

Note If a user resets the Cisco Wireless IP Phone 7920 to factory defaults by using the Phone Settings menu, you must reenter the network configuration settings before the wireless IP phone can access the AP. You can use the phone menus or the Cisco 7920 Configuration Utility to reconfigure the phone.

Related Topics

- How to Use the Cisco 7920 Configuration Utility, page 4-15
- Overview of the Cisco 7920 Configuration Utility, page 4-1

How to Use the Cisco 7920 Configuration Utility

This section provides the following information about using the Cisco 7920 Configuration Utility:

- Using the Cisco 7920 Configuration Utility, page 4-15
- Using the Settings Wizard, page 4-16
- Using the Phone Preferences Window, page 4-18
- Configuring the Phone Settings, page 4-20

Using the Cisco 7920 Configuration Utility

To use the configuration utility to configure the Cisco Wireless IP Phone 7920, follow these steps.

Procedure

Step 1 Power on the Cisco Wireless IP Phone 7920.

Step 2 Power on the Cisco Wireless IP Phone 7920, and enable the USB port. Press the **Menu** softkey, then select **Phone Settings > Enable/Disable USB Port > Enable**.

Step 3 Use the USB cable to connect the PC and the Cisco Wireless IP Phone 7920.

Step 4 To start the application, choose **Start > Programs > Cisco Systems 7920 > Cisco 7920 Configuration Utility**.

The Configuration Utility executes **Connection > Login** automatically to connect the Cisco Wireless IP Phone 7920 with the PC.

Step 5 In the Login window, select the default username *Admin,* and enter the password *cisco*. (If the login entries are authenticated, the On-Line indicator will be displayed at the left side of the status bar.)

Note You can modify the administrator's password by choosing **Edit > Change Admin Password**.

Step 6 Choose **File > New** to open a new Phone Preference window.

Step 7 Click the **Import** button to import settings from the Cisco Wireless IP Phone 7920.

Step 8 To modify the settings that are displayed in the Phone Preference window, see the "Using the Phone Preferences Window" section on page 4-18.

You can also use the Settings Wizard to configure the phone by choosing **Edit > Settings Wizard** from the menu bar.

Step 9 To save the settings to a configuration file, choose **File > Save** or **File > Save As**.

Step 10 To upload the file with the modified settings to the Cisco Wireless IP Phone 7920, click the **Export** button.

Related Topics

- Using the Settings Wizard, page 4-16
- Using the Phone Preferences Window, page 4-18
- Configuring the Phone Settings, page 4-20

Using the Settings Wizard

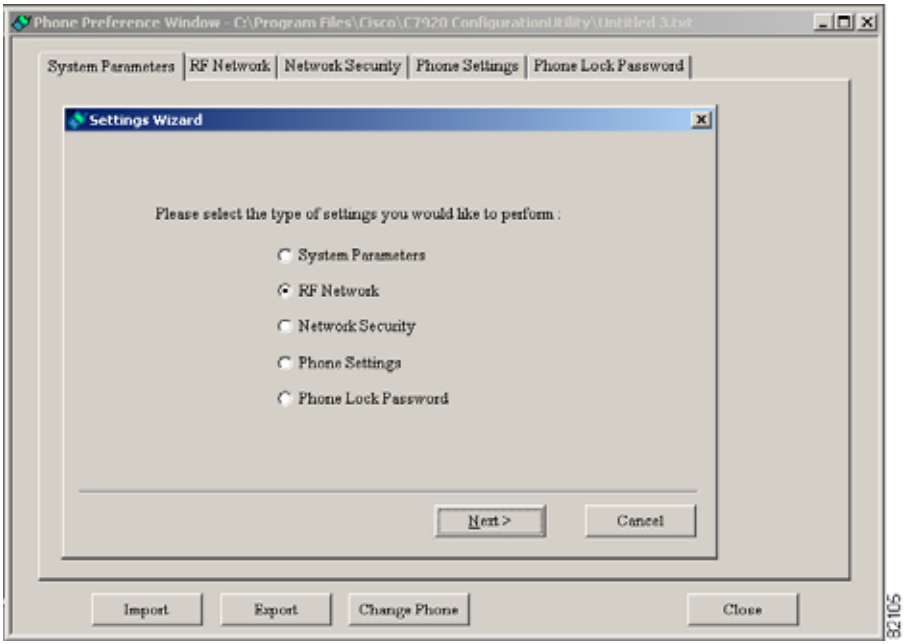
The Cisco 7920 Configuration Utility provides two ways to configure the phone settings:

- Use the Settings Wizard—To perform a step-by-step configuration .
- Use the Phone Preference window—To configure the phone manually.

The Settings Wizard window and the Phone Preference window appear simultaneously, as shown in Figure 4-2, when you choose **Edit > Settings Wizard**. You can use the Settings Wizard to guide you through modifying the following settings or you can access these settings from the Phone Preferences window tabs:

- System Parameters
- RF Network
- Network Security
- Phone Settings
- Phone Lock Password

Figure 4-2 Settings Wizard and Phone Preference Window



Related Topics

- Using the Cisco 7920 Configuration Utility, page 4-15
- Using the Phone Preferences Window, page 4-18
- Configuring the Phone Settings, page 4-20

Using the Phone Preferences Window

You can configure your Cisco Wireless IP Phone 7920 by using the Phone Preference window. To open the Phone Preference window, choose **Edit > Settings Wizard** or **File > New**.

There are two ways to configure the phone settings:

- Follow the steps provided by the Settings Wizard to perform the configuration step-by-step.
- Manually configure the phone in the Phone Preference window.

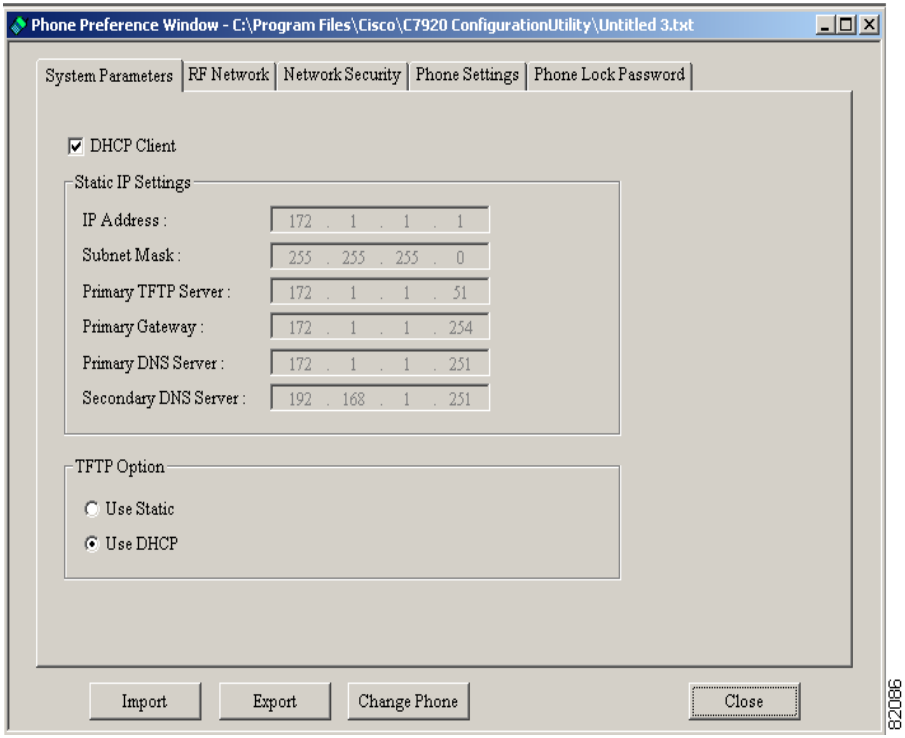
The Phone Preference window has configuration tabs at the top of the window and task buttons at the bottom.

The Phone Preference window tabs allow you to configure the following:

- System Parameters
- RF Network
- Network Security
- Phone Settings
- Phone Lock Password

For more information about the configuration tabs, see the "Configuring the Phone Settings" section on page 4-20

Figure 4-3 Phone Preference Window


Phone Preference Window - C:\Program Files\Cisco\C7920 ConfigurationUtility\Untitled 3.txt
System Parameters
RF Network
Network Security
Phone Settings
Phone Lock Password
DHCP Client
Static IP Settings
IP Address : 172 . 1 . 1 . 1
Subnet Mask : 255 . 255 . 255 . 0
Primary TFTP Server : 172 . 1 . 1 . 51
Primary Gateway : 172 . 1 . 1 . 254
Primary DNS Server : 172 . 1 . 1 . 251
Secondary DNS Server : 192 . 168 . 1 . 251
TFTP Option
Use Static
Use DHCP
Import
Export
Change Phone
Close
82086

Phone Preference Window Task Buttons

The buttons at the bottom of the Phone Preference window enable you to perform the following tasks:

- Importing Settings
- Exporting Settings
- Changing to Another Phone

Importing Settings

Click the **Import** button to obtain the settings from a Cisco Wireless IP Phone 7920 connected through a USB port. The imported settings are applied to the associated configuration tabs in the Phone Preference window.

Exporting Settings

Click the **Export** button to update the settings or firmware image of a Cisco Wireless IP Phone 7920 connected through a USB port. You need to save the modified settings before you can export them to the Cisco Wireless IP Phone 7920.

Changing to Another Phone

Only the administrator can use the **Change Phone** button in the Phone Preference window and change to another phone without having to log in again.

Click the Unplug or Eject Hardware icon ( ) on the Windows status bar to stop the Cisco Wireless IP 7920 Phone, and then disconnect and change to another phone.

Related Topics

- Using the Cisco 7920 Configuration Utility, page 4-15
- Using the Settings Wizard, page 4-16
- Configuring the Phone Settings, page 4-20

Configuring the Phone Settings

You can use the Phone Preference window tabs near the top of the window to perform the following tasks:

- Setting System Parameters
- Configuring RF Network Settings
- Setting Network Security
- Configuring Phone Settings
- Setting the Phone Lock Password

Setting System Parameters

The System Parameters tab in the Phone Preference window allows you to enable DHCP and the TFTP option. The Dynamic Host Configuration Protocol (DHCP) client provides a mechanism for allocating IP addresses dynamically so that addresses can be reused when hosts no longer need them.

If you use DHCP in the network and enable the DHCP client, the Cisco Wireless IP Phone 7920 can automatically obtain an IP address, subnet mask, and other IP configuration information from the DHCP server. If the DHCP client is disabled, you need to manually specify the static IP settings in the Static IP Settings group.

Enabling the DHCP Client and Setting the TFTP Option

To enable the DHCP client, follow these steps.

Procedure

Step 1 Click the **System Parameters** tab.

Step 2 To enable the DHCP client, check the **DHCP Client** check box.

The Static Settings option are inactive.

Step 3 Do one of the following:

- Click the **Use Static** radio button in the TFTP Option group to specify the IP address for the primary TFTP server.
- Click the **Use DHCP** radio button to allow the Cisco Wireless IP Phone 7920 to automatically obtain the network settings from the DHCP server.

Disabling the DHCP Client and Setting the TFTP Option

To disable the DHCP client, follow these steps.

Procedure

Step 1 Click the **System Parameters** tab.

Step 2 To disable the DHCP client, uncheck the **DHCP Client** check box.

The Use Static radio button in the TFTP Option group is automatically selected.

Step 3 Enter the following static IP settings under the DHCP Client option.

- **IP Address**—Enter the IP address of the Cisco Wireless IP Phone 7920.
- **Subnet Mask**—Enter an IP subnet mask address to identify the subnetwork so that the IP address can be recognized on the LAN.
- **Primary TFTP Server**— Enter the TFTP server address so that the file location can be identified.The configuration files and firmware images for the Cisco Wireless IP Phone 7920 are located on the TFTP server.
- **Primary Gateway IP Address**—Enter the primary gateway address. The primary gateway address determines the next network point to which a packet should be forwarded.
- **Primary DNS Server**—Enter a DNS server address DNS translates the Internet domain names into IP addresses.

Step 4 Choose **File > Save** to save the changes.

Configuring RF Network Settings

The (radio frequency) RF Network tab in the Phone Preference window allows you to configure the following wireless network settings for the Cisco Wireless IP Phone 7920:

- **Transmit power**—Power level of radio transmission in milliWatts (mW)
- **Data rate**—Data transmission rate in megabits per second (Mbps)
- **Service Set Identifier (SSID)**—Identifier for a set of wireless devices to communicate with each other. Several APs can have the same SSID to support a group of wireless phones.

To configure the RF Network settings, follow these steps.

Procedure

Step 1 Click the **RF Network** tab.

Step 2 To set the Transmit Power, click the arrow by the drop-down list and choose the appropriate power setting. (Default setting is 20mW)

Step 3 To set the Data Rate, click the arrow by the drop-down list and choose the appropriate data rate setting. (Default setting is 11mW)

Step 4 To enter the SSID1 setting, click the arrow by the drop-down list and choose one of these:

- **Any**—To use any AP in the network.
- **Specify—**To specify an SSID. Enter an SSID of up to 32 digits in length in the field.

Step 5 To enter the SSID2-4 settings, click the arrow by the drop-down lists and choose one of these:

- **Any**—To use any AP in the network
- **None—**No SSID is specified
- **Specify—**To specify an SSID. Enter an SSID of up to 32 digits in length in the field

Step 6 Choose **File > Save** to save the changes.

Setting Network Security

The Network Security tab in the Phone Preference window allows you to select the authentication type and encryption for the security settings.

Authentication Type

You can configure the following types of authentication:

- **Open**—Allows open access to APs. You can set the optional encryption type to static Wired Equivalent Privacy (WEP) Key .
- **Shared Key**—Enables the Shared Key security option on the local APs. You must set the encryption type as static WEP Key prior to setting the Shared Key authentication type.
- **LEAP**—Enables Cisco Light Extensible Authentication Protocol (LEAP), a proprietary Cisco protocol, designed for authenticating wireless devices by using a central RADIUS server in WLAN environment.

To configure the authentication type, follow these steps:

Procedure

Step 1 Click the **Network Security** tab.

Step 2 Choose one of the following security settings:

- Open-key—Click the **Open** radio button to enable security between the AP and the phone.
- Shared-key—Click the **Shared Key** radio button to enable security between the AP and phone.

  Note You must have set up the static WEP Key encryption type prior to selecting Shared key for authentication type.

- LEAP—Click the **LEAP** radio button to activate the LEAP setup fields. Specify an authorized username and password for the network access server (RADIUS server).

  Note The maximum length for each username or password is 32 characters.

Step 3 Choose **File > Save** to save the changes.

Encryption

Before you select the Open or Shared Key authentication type, you must set up the encryption schemes by using the Wired Equivalent Privacy (WEP) keys. Both the Cisco Wireless IP Phone 7920 and the Cisco Aironet APs support 40-bit and 128-bit encryption keys. You configure the WEP key by using hexidecimal characters.

If you do not use WEP encryption in the network, then choose None.

To configure WEP, follow these steps:

Procedure

Step 1 Click the **Network Security** tab.

Step 2 Click one of the **WEP key** radio buttons to activate the Encryption setup fields.

Step 3 Choose the encryption scheme and enter the appropriate key:

- Select **40 Bit Encryption** from the drop-down menu. In the WEP Key field, enter a 10-digit key in hexadecimal format (0–9, A–F).

  Example: ABCD123456

- Select **128 Bit Encryption** from the drop-down menu. In the WEP Key field, enter a 26-digit key in hexadecimal format (0–9, A–F).

  Example: AB123456789CD123456789EF

Step 4 Choose **File** > **Save** to save the changes.

Configuring Phone Settings

The Phone Settings tab in the Phone Preference window allows you to configure text for the phone display and customized ring tones for the phone. You can also set parameters for Cisco Discovery Protocol and upload new firmware to the phone.

To configure phone settings, use the following steps:

Procedure

Step 1 Click the **Phone Settings** tab.

Step 2 In the Greeting Message field, enter or edit the text (up to 15 characters) that displays when you start up the phone.

Step 3 In the Welcome Message field, enter or edit the text (up to 10 characters) that displays when the phone is in stand-by mode.

Step 4 In the Ring Tone area, you must configure a ring tone using the following settings:

- **Default Ring Tone in Phone**—Displays the current ring tone used on the Cisco Wireless IP Phone 7920. There are two default ring tones: Chirp 1 and Chirp 2.

- **Ring List Filename and Path**—To specify a local XML Ring List file, click the "**...**" button , and choose the desired Ring List File.
- **Ring Tone Name**—Click the arrow by the drop-down list, and choose the desired ring tone from the Ring List File.

Step 5 Choose **File > Save** to save the changes.

To add the louder ring tone to the ring tone list, see the "Downloading Loud Ring Tones" section on page 7-5.

Setting CDP Parameters

Cisco Discovery Protocol (CDP) is a device-discovery protocol that runs on all Cisco network equipment. Each device sends identifying messages to a multicast address, and each device monitors the messages sent by other devices.

If you use CDP in your network, use the following steps to configure CDP parameters for the phone.

Procedure

Step 1 Click the **Phone Settings** tab.

Step 2 Check the **Cisco Discovery Protocol** check box to activate the CDP parameters.

Step 3 In the **CDP Time To Live** field, enter the time in seconds (0 to 255) that CDP packets should stay in a phone buffer before they are discarded.

Step 4 In the **CDP Transmit Interval** field, enter the interval time (from 0 to 65535 seconds) between sending CDP packets from the Cisco Wireless IP Phone 7920.

Step 5 Choose **File > Save** to save the changes.

Uploading a New Firmware Image

You can upload a new firmware image at the same time that you export the phone configuration to a Cisco Wireless IP Phone 7920.

Note The version of the firmware image must be compatible with the current phone model.

To enable uploading the new firmware, use the following steps.

Procedure

Step 1 Click the **Phone Settings** tab.

Step 2 Check the **Upload New Firmware Image** check box to activate the Firmware Image Filename and Path field.

Step 3 To specify a local firmware image file, click the arrow by the drop-down list for the **Firmware Image Filename and Path field**. Choose a Firmware Image file from the dialog box.

When you click the Export button in the Phone Preference window, the new firmware image will upload to the phone.

Step 4 Choose **File** > **Save** to save the changes.

Setting the Phone Lock Password

For added security, you can set password protection for the phone keypad. When the user locks the phone keypad, the user must enter the password to unlock the keypad. Use the Phone Lock Password tab in the Phone Preference window to set up the password or reset the password for the Cisco Wireless IP Phone 7920.

Procedure

Step 1 Click the **Phone Lock Password** tab.

Step 2 Check the **Change Password** check box.

Step 3 In the **New Password** field, enter the password containing numbers 0-9, * or # up to 10 characters in length.

Step 4 In the **Verify New Password** field, reenter the same password.

Step 5 Choose **File** > **Save** to save the changes.

Resetting the Phone Lock Password to Default

When you need to clear a password from a phone, you can reset the password to default by following these steps. All phone configuration data is retained when you reset the password by using this procedure.

Procedure

Step 1 Click the **Phone Lock Password** tab.

Step 2 Check the **Reset Password to Default** check box.

Step 3 Choose **File** > **Save** to save the changes.

Note You must inform the user that the default password is "12345 " to unlock the keypad.

Resetting the Phone Lock Password for a Locked Phone

When a user has locked the phone and forgets the password, try using the default password, "12345."

If you cannot unlock the phone by using the default password, then you must call the Cisco Technical Assistance Center (TAC) to have the phone reset to factory defaults.

Caution Be aware that resetting the phone to factory defaults removes all phone configuration, including Speed Dial, Call History, and Profile settings. The network configuration is reset to default settings so that the phone cannot access the AP and telephony network.

Reconfigure the network settings by using the Network Configuration menu on the phone. See Chapter 5, "Configuring Network Settings on the Cisco Wireless IP Phone 7920" and Chapter 6, "Configuring the Wireless Network Settings on the Cisco Wireless IP Phone 7920."

You can also use the Cisco 7920 Configuration Utility after enabling the USB port to reconfigure the phone. See "Using the Settings Wizard" section on page 16.

Related Topics

- Current Phone Settings Window, page 4-8
- Using the Cisco 7920 Configuration Utility, page 4-15
- Using the Settings Wizard, page 4-16
- Using the Phone Preferences Window, page 4-18
- Configuration File Format, page 4-29

Configuration File Format

The settings that you configure for the phone are formatted into a file that is ASCII-based and is not case sensitive. It does not contain entries with passwords, login names, WEP keys, or any other critical data.

The format of a configuration file contains two parts and looks like this:

Setting Parameter = Setting Value

For example:

```
DHCPclient=Enable
IPaddress=10.0.0.1
SubnetMask=255.255.255.0
SSID=cascade
```

Available Settings for System Parameters

Table 4-4 lists the available settings for system parameters.

Table 4-4 Available Settings for System Parameters

Setting Parameter	Setting Value	Comment
DHCPclient	Enable | Disable	Enable or disable DHCP client
IPaddress	xxx.xxx.xxx.xxx	IP address
SubnetMask	xxx.xxx.xxx.xxx	Subnet mask
PrimaryTFTPserver	xxx.xxx.xxx.xxx	Primary TFTP server address
PrimaryGateway	xxx.xxx.xxx.xxx	Primary gateway address
PrimaryDNSserver	xxx.xxx.xxx.xxx	Primary DNS server address
SecondaryDNSserver	xxx.xxx.xxx.xxx	Secondary DNS server address

Available Settings for RF Network

Table 4-5 lists the available settings for an RF network.

Table 4-5 Available Settings for RF Network

Setting Parameter	Setting Value	Comment
SSID 1	Character string (maximum length = 32)	SSID string
SSID 2	Character string (maximum length = 32)	SSID string
SSID 3	Character string (maximum length = 32)	SSID string
SSID 4	Character string (maximum length = 32)	SSID string
TransmitPower	1 | 5 | 20 | 50 | 100	Transmit power level (mW)
DataRate	1 | 2 | 5.5 | 11 | Auto	Data rate (Mbps)

Available Settings for Phone Configurations

Table 4-6 lists the available settings for phone configurations.

Table 4-6 Available Settings for Phone Configurations

Setting Parameter	Setting Value	Comment
RingToneIndex	Integer Value (1–4) Currently using: (index 1-3) 1: Chirp 1 2: Chirp 2 3: Current ring tone User specify: (index 4) 4: User specify from ring list	The index of the ring tone. Chirp 1 and Chirp 2 are the default ring tones.
RingToneName	Character string (maximum length = 20)	The name of the ring tone.
RingToneFile	Character string (maximum length = 64)	The ring tone file (*.raw).
DispWelcomeMsg	Character string (maximum length = 10)	Display welcome message.
NewFirmwareImage Upgrade	Enable | Disable	Enable or disable firmware upgrade.
NewFirmwareImage Filename	Character string (maximum length = 64)	Firmware filename and path.
CDP	Enable | Disable	Enable or disable Cisco Discovery Protocol.
CDPTransmitInterval	Integer Value (0–65535)	CDP transmission interval (seconds).
CDPTTL	Integer Value (0–255)	CDP time to live (seconds).

Related Topic

- Using the Cisco 7920 Configuration Utility, page 4-15

Configuring Network Settings on the Cisco Wireless IP Phone 7920

The Cisco Wireless IP Phone 7920 includes many configurable network and device settings that you might need to modify from the phone menus.

The following sections provide details about configuring and verifying these network settings:

- Accessing Network Configuration Settings on the Phone, page 5-1
- Verifying or Entering Network Settings, page 5-4
- Modifying DHCP Settings, page 5-7
- Configuring Static Settings, page 5-9
- Configuring TFTP Options, page 5-13

Accessing Network Configuration Settings on the Phone

You can view and set most network configuration options for the Cisco Wireless IP Phone 7920 by using the Network Configuration menu on the phone.

For a description of the options that appear on the Network Configuration menu, see Table 5-1.

This section includes the following topics:

- Displaying the Network Configuration Menu, page 5-2
- Guidelines for Editing Settings in the Network Configuration Menu, page 5-3
- Verifying or Entering Network Settings, page 5-4

Displaying the Network Configuration Menu

To display the Network Config menu on a Cisco Wireless IP Phone 7920, follow these steps:

Procedure

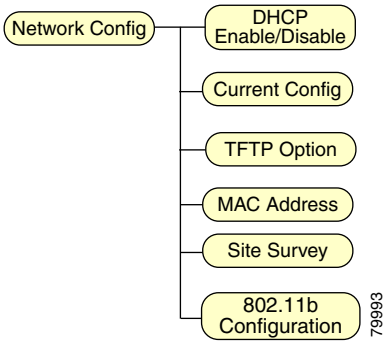
Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config**.

Figure 5-1 shows the top level menu options for the Network Configuration menu.

To exit the Network Configuration Menu, press the **Back** softkey to return to the main screen.

Figure 5-1 Top Level Options in the Network Configuration Menu



Related Topics

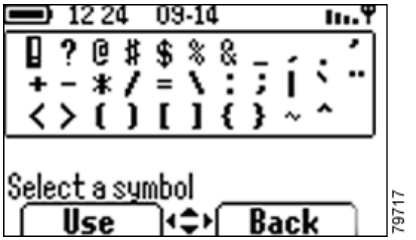
- Accessing Network Configuration Settings on the Phone, page 5-1
- Guidelines for Editing Settings in the Network Configuration Menu, page 5-3

Guidelines for Editing Settings in the Network Configuration Menu

When you edit the value of an option on the Network Configuration menu, you can enter characters, numbers, and special characters from the phone keypad. Use the numeric keys on the keypad to enter the number or the assigned characters. Each press moves to another character choice. Use the following guidelines when entering values:

- **Enter characters**—Press the numeric key once to enter the first character. Press it twice to enter the second character or press it three times to enter the third character.
- **Enter numbers**—Press the numeric key four times to enter the number.
- **Delete the last character**—Press **Clear** once to delete the last character or number in the string.
- **Delete the entire string**—Press and hold **Clear** to delete the entire text or number string.
- **Use upper case characters**—Press * to switch between uppercase and lowercase. ABC or abc appears on the right corner of the screen to indicate the case.
- **Enter a space**—Press ▼ to enter a space between characters.
- **Enter special characters and symbols**—Press #. Doing so displays the symbol table, as shown in Figure 5-2. Use ▲, ▼, ◀, or ▶ to select the desired symbol . Press **Use** to insert the symbol into your text.
- **Cancel editing mode**—Press **Back** as needed to return to the menu option or main screen.

Figure 5-2 Symbol Table



Related Topics

- Displaying the Network Configuration Menu, page 5-2
- Verifying or Entering Network Settings, page 5-4

Verifying or Entering Network Settings

On Cisco Wireless IP Phone 7920, you can view detailed information about the current network settings of the phone. You can use this information to troubleshoot problems or to change settings. The Network Configuration menu provides access to the network settings that are described in Table 5-1.

Table 5-1 Network Settings

Network Setting	Description	Usage Notes
DHCP Enable	Displays Yes or No to indicate whether Dynamic Host Configuration Protocol (DHCP) is being used to obtain an IP address for the phone.	See the "Modifying DHCP Settings" section on page 5-7
DHCP Server	Displays IP address of the Dynamic Host Configuration Protocol (DHCP) server that the phone uses to obtain IP address.	See the "Modifying DHCP Settings" section on page 5-7.
IP Address	Indicates the Internet Protocol (IP) address of the phone.	See the "Assigning an IP Address" section on page 5-9.
Subnet Mask	Indicates the subnet mask used by the phone.	See the "Assigning a Subnet Mask" section on page 5-10.

Table 5-1 Network Settings (continued)

Network Setting	Description	Usage Notes
Hostname	Name assigned to the phone with this format SEP*macaddress*	Assigned by Cisco CallManager.
Primary Gateway	Displays the IP address for the default gateway used by the phone.	See the "Assigning a Primary Gateway" section on page 5-11.
Primary TFTP Server	Displays the IP address for the primary Trivial File Transfer Protocol (TFTP) server used by the phone to obtain configuration files.	See the "Configuring TFTP Options" section on page 5-13.
Primary DNS Server Secondary DNS Server	Displays the IP address for the Domain Name System (DNS) server used by the phone to resolve the host name of the TFTP server, Cisco CallManager system and web server host names.	See the "Assigning DNS Servers" section on page 5-12.
CallManager 1-5	Cisco CallManager servers that are available for processing calls from this phone, in prioritized order. For an available server, an option will show the Cisco CallManager server IP address and one of the following states: • **Active**—the Cisco CallManager server from which the phone is currently receiving call-processing services. • **Standby**—the Cisco CallManager server to which the phone switches if the current server goes down. • **None**—no TCP connection to this Cisco CallManager server. • **SRST**—Survivable Remote Site Telephony router that assumes control of call processing if all other Cisco CallManager servers are unreachable.	Use Cisco CallManager Administration to modify. Configure the SRST router address in the Device Pool section in Cisco CallManager Administration.

Note The SRST Cisco CallManager always appears last in the list of servers, even if it is active.

Related Topics

- Viewing the Current Configuration, page 5-6
- Modifying DHCP Settings, page 5-7
- Configuring Static Settings, page 5-9
- Configuring TFTP Options, page 5-13

Viewing the Current Configuration

To view the current network settings for a Cisco Wireless IP Phone 7920, use the following steps.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > Current Config**.

Step 3 Press **Select** to view the list of network settings.

See Table 5-1 for descriptions and references for these settings.

Step 4 To return to the Network Config screen, press the **Back** softkey.

Related Topics

- Verifying or Entering Network Settings, page 5-4
- Modifying DHCP Settings, page 5-7
- Configuring Static Settings, page 5-9
- Configuring TFTP Options, page 5-13

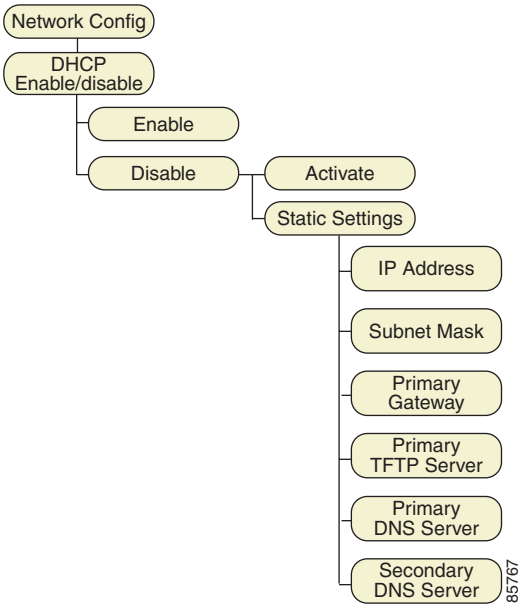
Modifying DHCP Settings

Dynamic Host Configuration Protocol (DHCP) automatically assigns IP addresses to devices when you connect them to the network. If you do not use DHCP in your network, then you must disable DHCP and manually enter network configuration information. You can use the DHCP Enable/Disable menu, as shown in Figure 5-3, on the phone to configure DHCP.

This section provides information about enabling and disabling DHCP in the following topics:

- Enabling DHCP, page 5-8
- Disabling DHCP, page 5-8
- Configuring Static Settings, page 5-9

Figure 5-3 DHCP Menu Options



Enabling DHCP

The Cisco IP Phones enable DHCP by default, but you can reset the protocol if it becomes disabled. Use the following steps to enable DHCP from the phone.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > DHCP Enable/Disable**.

Step 3 Scroll to **Enable** and press **Select**.

A check mark appears next to the selected option.

Step 4 Press **Back** to exit the menu and save the change.

Related Topics

- Disabling DHCP, page 5-8
- Configuring Static Settings, page 5-9

Disabling DHCP

If you do not use DHCP in your network, use this procedure to disable DHCP before manually assigning IP addresses to Cisco IP Phones.

Note When DHCP is enabled in your network, you cannot complete procedures to configure IP settings or TFTP options.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > DHCP Enable/Disable**.

Step 3 Scroll to **Disable** and press **Select**.

The Disable menu options display.

Step 4 Scroll to **Activate** and press **Select**.

A check mark appears next to the Disable option.

You must manually set the network settings in the Static Settings menu. See the "Configuring Static Settings" section on page 5-9 for more information.

Related Topics

- Enabling DHCP, page 5-8
- Configuring Static Settings, page 5-9

Configuring Static Settings

When DHCP is disabled in the network, you must configure the following settings in the Static Settings menu:

Use these guidelines when manually configuring the IP settings:

- Ensure the TFTP server has an IP address.
- Ensure the default gateway IP address is on the same subnet as the host IP address.

Note Procedures involved in configuring IP settings or TFTP options cannot be completed when DHCP is enabled in your network.

This section covers the following topics:

- Assigning an IP Address, page 5-9
- Assigning a Subnet Mask, page 5-10
- Assigning a Primary Gateway, page 5-11
- Assigning a Primary TFTP Server, page 5-11
- Assigning DNS Servers, page 5-12

Assigning an IP Address

The IP address is the unique logical address identifying each host computer, or node, on a TCP/IP network. An IP address is a 32-bit number expressed as four decimal numbers from 0 to 255 separated by periods.

Before you can assign an IP address, you must disable DHCP. For instructions, see the "Disabling DHCP" section on page 5-8.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > DHCP Enable/Disable** > **Disable**

Step 3 Scroll to **Static Settings** and press **Select**.

The Static Settings menu options display.

Step 4 Scroll to **IP Address** and press **Select**.

Step 5 Press the **Edit** softkey.

Step 6 Enter or modify the IP address.

For information about entering values, see the "Guidelines for Editing Settings in the Network Configuration Menu" section on page 5-3.

Step 7 Press **Back** to return to the Static Settings options.

Assigning a Subnet Mask

The subnet mask is used to partition the IP address into a network and a host identifier. The subnet mask is used to mask a portion of the IP address so that TCP/IP can distinguish the network ID from the host ID.

Before you can assign a subnet mask, you must disable DHCP. For instructions, see the "Disabling DHCP" section on page 5-8.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > DHCP Enable/Disable** > **Disable**

Step 3 Scroll to **Static Settings** and press **Select**.

The Static Settings menu options display.

Step 4 Scroll to **Subnet Mask,** then press **Select**.

Step 5 Press the **Edit** softkey.

Step 6 Enter or modify the IP address.

For information about entering values, see the "Guidelines for Editing Settings in the Network Configuration Menu" section on page 5-3.

Step 7 Press **Back** to return to the Static Settings options.

Assigning a Primary Gateway

If you manually assign an IP address to the Cisco Wireless IP Phone 7920, you must indicate the primary gateway to be used. The gateway provides connectivity to the IP network beyond the subnet to which the phone belongs.

Before you can assign a primary gateway, you must disable DHCP. For instructions, see the "Disabling DHCP" section on page 5-8.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > DHCP Enable/Disable** > **Disable**

Step 3 Scroll to **Static Settings** and press **Select**.

The Static Settings menu options display.

Step 4 Scroll to **Primary Gateway** and press **Select**.

Step 5 Press the **Edit** softkey.

Step 6 Enter or modify the IP address.

For information about entering values, see the "Guidelines for Editing Settings in the Network Configuration Menu" section on page 5-3.

Step 7 Press **Back** to return to the Static Settings options.

Assigning a Primary TFTP Server

The TFTP Server indicates the primary Trivial File Transfer Protocol (TFTP) server used by the phone to obtain configuration files. If you have disabled DHCP, then you must assign a primary TFTP server.

You can use DHCP in the network and choose to assign a specific TFTP server for this phone. See the "Configuring TFTP Options" section on page 5-13 for more information.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config** > **DHCP Enable/Disable** > **Disable**

Step 3 Scroll to **Static Settings** and press **Select**.

The Static Settings menu options display.

Step 4 Scroll to **Primary TFTP Server** and press **Select**.

Step 5 Press the **Edit** softkey.

Step 6 Enter or modify the IP address.

For information about entering values, see the "Guidelines for Editing Settings in the Network Configuration Menu" section on page 5-3.

Step 7 Press **Back** to return to the Static Settings options.

Assigning DNS Servers

The DNS setting on the Cisco Wireless IP Phone 7920 allows you to use host names to specify remote computers. Host names are character strings with some mnemonic meaning, which makes it easier to associate to different computers than by using IP addresses.

The phones use DNS to resolve the host name of TFTP servers, Cisco CallManager systems, and web server host names when the system is configured to use names rather than IP addresses.

You can assign a primary DNS server and a secondary DNS server as a backup resource.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config** > **DHCP Enable/Disable** > **Disable**

Step 3 Scroll to **Static Settings** and press **Select**.

The Static Settings menu options display.

Step 4 Scroll to **Primary DNS Server**, then press **Select**.

Step 5 Press the **Edit** softkey.

Step 6 Enter or modify the IP address.

For information about entering values, see the "Guidelines for Editing Settings in the Network Configuration Menu" section on page 5-3.

Step 7 Scroll to **Secondary DNS Server**, then press **Select**.

Step 8 Press the **Edit** softkey.

Step 9 Enter or modify the IP address.

Step 10 Press **Back** to return to the Static Settings options.

Related Topics

- Displaying the Network Configuration Menu, page 5-2
- Guidelines for Editing Settings in the Network Configuration Menu, page 5-3
- Viewing the Current Configuration, page 5-6
- Configuring TFTP Options, page 5-13
- Viewing the Media Access Control (MAC) Address, page 5-14

Configuring TFTP Options

If you use DHCP to direct the Cisco IP Phones to a TFTP server, you can also assign an alternative TFTP server to some phones instead of the one assigned by DHCP. To assign a TFTP server to a phone, use the following steps.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config** > **TFTP Option**

Step 3 To use DHCP to assign a TFTP server IP address, scroll to **Use DHCP** or

To use the TFTP server IP address assigned in the Static Settings options, scroll to **Use Static**.

Step 4 Press **Select**.

Step 5 Press **Back** to return to the Network Config menu.

Related Topics

- Configuring Static Settings, page 5-9
- Modifying DHCP Settings, page 5-7
- Viewing the Media Access Control (MAC) Address, page 5-14

Viewing the Media Access Control (MAC) Address

Every phone has a unique Media Access Control (MAC) address that is assigned to the device when it is manufactured. The MAC address appears on the back of the phone under the battery or you can use the menu to view it.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > MAC Address**

Step 3 Press **Select** to view the MAC address for the phone.

Step 4 Press **Back** to return to the Static Settings options.

To configure the wireless network settings in the 802.11b menu, refer to Chapter 6, "Configuring the Wireless Network Settings on the Cisco Wireless IP Phone 7920."

Related Topics

- Viewing the Current Configuration, page 5-6
- Configuring TFTP Options, page 5-13

Configuring the Wireless Network Settings on the Cisco Wireless IP Phone 7920

In addition to the typical network settings for the Cisco Wireless IP Phone 7920 there are several configurable settings specific to the wireless network that you might need to modify from the phone menus.

After you have added all the voice users to your wireless LAN (WLAN), Cisco recommends that you periodically perform a verification site survey of your radio signal strength and roaming capabilities.

The following sections provide details about configuring and verifying wireless network settings:

- Accessing the Wireless Network Configuration Settings on the Phone, page 6-2
- Entering or Verifying Wireless Settings, page 6-4
- Entering or Verifying 802.11b Configuration Settings, page 6-10
- Performing a Site Survey Verification, page 6-15

Accessing the Wireless Network Configuration Settings on the Phone

You can view and set most wireless network configuration options for the Cisco Wireless IP Phone 7920 by using the Network Configuration menu and the 802.11b submenu on the phone.

For a description of the options that appear on the 802.11b Configuration submenu, see Table 6-1.

This section includes the following topics:

- Displaying the 802.11b Configuration Menu, page 6-2
- Entering or Verifying Wireless Settings, page 6-4
- Entering or Verifying 802.11b Configuration Settings, page 6-10

Displaying the 802.11b Configuration Menu

To display the 802.11b Configuration menu on a Cisco Wireless IP Phone 7920, follow these steps:

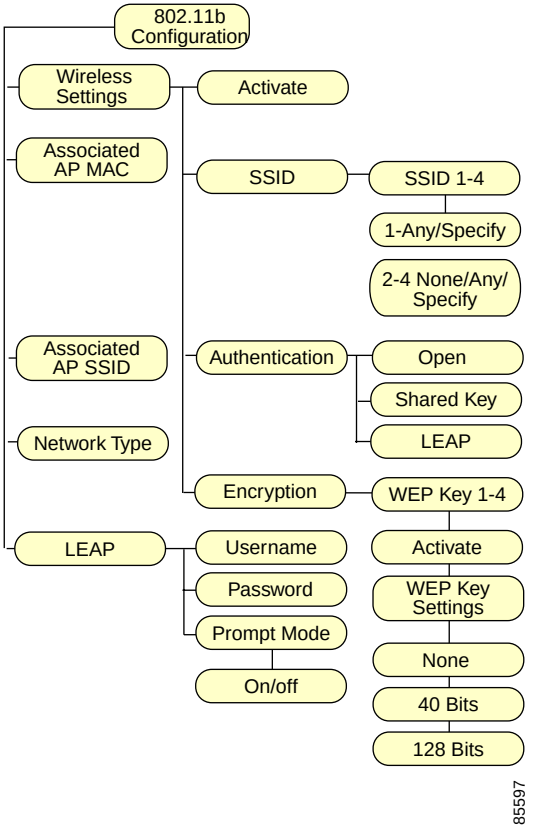
Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b**.

Figure 6-1 shows the menu options for the 802.11b submenu.

Figure 6-1 802.11b Configuration Menu



Related Topics

- Entering or Verifying Wireless Settings, page 6-4
- Entering or Verifying 802.11b Configuration Settings, page 6-10
- Performing a Site Survey Verification, page 6-15

Entering or Verifying Wireless Settings

The Wireless submenu contains settings that the phone uses to authenticate with an access point. These settings include the SSIDs, authentication and encryption data that the phone uses.

On Cisco Wireless IP Phone 7920, you can view detailed information about the current network settings of the phone. You can use this information to troubleshoot problems or to change settings. The 802.11b Configuration menu provides access to the wireless network settings that are described in Table 6-1.

Table 6-1 Wireless Network Settings

Network Setting	Description	Usage Notes
Service Set Identifier (SSID)	Unique identifier for accessing wireless access points.	"Setting Up the Service Set Identifier (SSID)" section on page 6-5
Authentication	The type of security used to validate that phone requests to the AP are authorized. Three options are: • Open—Open access to APs • Shared Key—Authentication on the AP • LEAP—Authentication using a RADIUS server	"Selecting the Authentication Type" section on page 6-6
Encryption Wired Equivalent Privacy (WEP) Key	An encryption scheme for securing wireless communications by using an encryption key.	"Setting Up the Wired Equivalent Privacy Keys" section on page 6-7
Light Extensible Authentication Protocol (LEAP)	Cisco proprietary authentication and encryption method for securing wireless communications using a RADIUS server	"Setting the Cisco Light Extensible Authentication Protocol (LEAP)" section on page 6-12
Associated AP MAC Address	MAC address for the access point to which the phone is currently associated.	"Viewing the Associated Access Point MAC Address" section on page 6-10

Table 6-1 Wireless Network Settings (continued)

Network Setting	Description	Usage Notes
Associated AP SSID	SSID for the access point to which the phone is currently associated.	"Viewing the Associated AP SSID" section on page 6-11
Network Type	Infrastructure Mode	The only option for this setting.

This section provides information about the following wireless settings:

- Setting Up the Service Set Identifier (SSID)
- Selecting the Authentication Type
- Setting Up the Wired Equivalent Privacy Keys
- Activating the Wireless Settings

Setting Up the Service Set Identifier (SSID)

An SSID is a unique identifier that Cisco Wireless IP Phone 7920s use to communicate with each other through one or more access points (APs). You must assign an SSID to the phone that is also assigned to APs in the wireless network. Several APs can share the same SSID on a network or subnetwork.

You can assign up to four SSIDs to a phone. For SSID1, you can choose "Any" so the phone can access all APs. Or you can choose "Specify" and enter a specific SSID. An SSID can have any value but cannot exceed 32 digits.To configure the SSID setting, use the following steps:

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b Configuration > Wireless Settings**

Step 3 Scroll to **SSID** and press **Select**.

The SSID options display.

Step 4 Scroll to **SSID1**, and press **Select**.

Step 5 Choose **Any** or choose **Specify**.

Step 6 If you chose “Specify, ” press **Edit** and enter an SSID value.

Note An “SSID Required!”message appears if you leave the SSID field blank when you selected “Specify.”

Step 7 Scroll to **SSID 2,** and press **Select**.

Step 8 Choose Any, None, or Specify. If you choose “Specify”, you must enter another SSID value.

For information about entering values, see the “Guidelines for Editing Settings in the Network Configuration Menu” section on page 5-3.

Step 9 Choose the entry for SSID 3 and SSID4 as done in Step 8.

Step 10 When you have completed the entries, press **Save**.

Step 11 Press **Back** to return to the Wireless options.

Related Topics

- Selecting the Authentication Type
- Setting Up the Wired Equivalent Privacy Keys
- Activating the Wireless Settings

Selecting the Authentication Type

The Cisco Wireless IP Phone 7920 supports three types of authentication:

- **Open**—Provides access to all APs and authentication through the optional use of WEP keys at the local access point
- **Shared Key**—Provides shared-key authentication through the use of WEP keys at the local access point
- **LEAP**—A proprietary protocol for use in 802.11 wireless LAN environments that exchanges a password and username with a RADIUS server in the network

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b Configuration > Wireless Settings**

Step 3 Scroll to **Authentication** and press **Select**.

The Authentication options display.

Step 4 Scroll to one of these options and press **Select**.

- **Open**
- **Shared Key**
- **LEAP**

A check appears by the selected authentication type.

Note You need to enable WEP key encryption before you choose the Shared Key authentication type. Otherwise, an "Enable WEP key first!" message appears.

Related Topics

- Setting Up the Wired Equivalent Privacy Keys
- Setting Up the Service Set Identifier (SSID)
- Activating the Wireless Settings

Setting Up the Wired Equivalent Privacy Keys

The 802.11b standard provides an optional encryption scheme called *Wired Equivalent Privacy* (WEP). If your wireless network uses WEP encryption, you need to activate the WEP keys and then enter a hexidecimal key.

The WEP transmit keys for the phone must match the WEP keys assigned to the access point. Cisco Wireless IP Phone 7920 and Cisco Aironet Access Points support both 40-bit and 128-bit encryption keys. If you do not use WEP encryption in the WLAN, then choose None.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b Configuration > Wireless Settings**

Step 3 Scroll to **Encryption** and press **Select**.

The WEP Key options display.

Step 4 Scroll to the WEP key that you want to activate, and press **Select**.

Step 5 Scroll to **Activate** and press **OK** to activate the key.

A check mark appears next to the activated key.

Step 6 Press **Back** to return to the Wireless Setting options.

Configuring a WEP Key

After you activate a WEP key you need to configure the password. You can choose on of the following types of encryption schemes:

- **40-bit encryption**—You must enter a 10-digit password that uses the hexadecimal format of 0-9 and/or the characters A-F (for example, ABCD123456*)*.
- **128-bit encryption**—You must enter a 26-digit password that uses the hexadecimal format of 0-9 and/or the characters A-F (for example, AB123456789CD01234567890EF).
- **None**—The WEP key function is disabled.

To configure the WEP passwords, use the following steps.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b Configuration > Wireless Settings**

Step 3 Scroll to **Encryption** and press **Select**.

The WEP Key options display.

Step 4 Scroll to the WEP key that you activated, and press **Select**.

Step 5 Scroll to **WEP Key Settings** and press **Select** .

Step 6 Choose one of these options:

- None—Disables the WEP key function and a check mark appears.
- 40 Bits—Enter a 10-digit password
- 128 Bits—Enter a 26-digit password

Step 7 When you have completed the entry, press **Back**.

A check mark appears next to the selected option.

Related Topics

- Activating the Wireless Settings
- Setting Up the Service Set Identifier (SSID)
- Selecting the Authentication Type

Activating the Wireless Settings

After you have added entries or made changes to entries in the Wireless Settings menu, you must activate them. Use the following steps to activate the settings.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b Configuration > Wireless Settings**

Step 3 Scroll to **Activate** and press **Select**.

The Service Set Identifier (SSID), authentication type, or Wired Equivalent Privacy (WEP) keys are activated.

Related Topics

- Entering or Verifying 802.11b Configuration Settings, page 6-10
- Accessing the Wireless Network Configuration Settings on the Phone, page 6-2

Entering or Verifying 802.11b Configuration Settings

The 802.11b Configuration submenu contains wireless settings that the phone uses. In addition, the menu contains options for other wireless network components such as the access point and ACS server.

This section provides information about the following 802.11B settings:

- Viewing the Associated Access Point MAC Address, page 6-10
- Viewing the Associated AP SSID, page 6-11
- Viewing the Network Type, page 6-11
- Setting the Cisco Light Extensible Authentication Protocol (LEAP), page 6-12

Viewing the Associated Access Point MAC Address

To identify the access point that the Cisco Wireless IP Phone 7920 is currently associated with, use the following steps.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b Configuration**.

Step 3 Scroll to **Associated AP MAC**.

Step 4 Press **Select** to view the AP MAC address that is associated with the phone.

Step 5 Press **Back** to return to the 802.11b Configuration menu options.

Related Topics

- Viewing the Associated AP SSID, page 6-11
- Viewing the Network Type, page 6-11

Viewing the Associated AP SSID

To identify the SSID that the AP and Cisco Wireless IP Phone 7920 are currently associated with, use the following steps.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b Configuration**.

Step 3 Scroll to **Associated AP SSID**.

Step 4 Press **Select** to view the AP SSID that the phone is using to associate with the AP.

Step 5 Press **Back** to return to the 802.11b Configuration menu options.

Related Topics

- Viewing the Associated Access Point MAC Address, page 6-10
- Viewing the Network Type, page 6-11

Viewing the Network Type

The network type setting is always set for infrastructure. The Cisco Wireless IP Phone 7920 does not support adhoc network type.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b Configuration**.

Step 3 Scroll to **Network Type**.

Step 4 Press **Select** to view the network type.

Step 5 Press **Back** to return to the 802.11b Configuration menu options.

Related Topics

- Viewing the Associated Access Point MAC Address, page 6-10
- Viewing the Associated AP SSID, page 6-11
- Setting the Cisco Light Extensible Authentication Protocol (LEAP), page 6-12

Setting the Cisco Light Extensible Authentication Protocol (LEAP)

When your network uses Cisco LEAP for user authentication and voice encryption, you must configure both the user name and a password on the access control server (ACS) and the phone.

Use the following steps to set up the LEAP requirements on the phone.

Setting the LEAP Username

To to enter or change the LEAP username, you must use exactly the same username in the phone option that is configured in the ACS server.

Note The maximum length of the LEAP username entry is 32 characters.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b Configuration**

Step 3 Scroll to **LEAP** and press **Select**.

The LEAP options display.

Step 4 Scroll to **Username** and press **Select**.

Step 5 Press the **Edit** softkey.

Step 6 Enter or modify the username.

For information about entering values, see the "Guidelines for Editing Settings in the Network Configuration Menu" section on page 5-3.

Step 7 To confirm the change, press **OK**.

Step 8 Press **Back** to return to the LEAP options.

Setting the LEAP Password

To to enter or change the LEAP password, you must use exactly the same character string in the phone option that is configured in the ACS server.

Note The maximum length of the LEAP password entry is 32 characters.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b Configuration**

Step 3 Scroll to **LEAP** and press **Select**.

The LEAP options display.

Step 4 Scroll to **Password** and press **Select**.

Step 5 Press the **Edit** softkey.

Step 6 Enter or modify the password.

Step 7 To confirm the change, press **OK**.

For information about entering values, see the "Guidelines for Editing Settings in the Network Configuration Menu" section on page 5-3.

Step 8 Press **Back** to return to the LEAP options.

Switching the LEAP Prompt Mode On and Off

When the LEAP Prompt Mode is turned on, the phone displays a message requesting that you enter the LEAP username and password whenever you power on the Cisco Wireless IP Phone 7920.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Network Config > 802.11b Configuration**

Step 3 Scroll to **LEAP** and press **Select**.

The LEAP options display.

Step 4 Scroll to **Prompt Mode** and press **Select**.

Step 5 To turn off the prompt mode, scroll to **Off**.

To turn on the prompt mode, scroll to **On**.

Step 6 To confirm the change, press **Select**.

A check mark appears next to the selected option.

Step 7 Press **Back** to return to the LEAP options.

Related Topics

- Accessing the Wireless Network Configuration Settings on the Phone, page 6-2
- Entering or Verifying Wireless Settings, page 6-4
- Performing a Site Survey Verification, page 6-15
- Requirements for an Optimal Wireless Voice Environment, page 6-18

Performing a Site Survey Verification

After the initial deployment of wireless phones in the WLAN, it is a good practice to perform site surveys at regular intervals to verify that the APs are providing adequate coverage and that wireless phones can roam from one AP to another with no audio problems.

You should use the wireless phones and the Aironet Client Utility (ACU) to verify that the signal range and transmission power meet the recommendations for an optimal wireless voice environment. See the "Requirements for an Optimal Wireless Voice Environment" section on page 6-18.

Use the following topics for information about performing the site survey.

- Site Survey Verification Steps, page 6-15
- Using the Cisco Wireless IP Phone 7920 Site Survey Utility, page 6-16
- Requirements for an Optimal Wireless Voice Environment, page 6-18

Site Survey Verification Steps

For more detailed information about performing a site survey verification, refer to the " Wireless IP Telephony Verification section in the *Cisco Wireless IP Phone 7920 Design and Deployment Guide.*

When you perform a site survey verification and encounter problems, see the Chapter 9, "Troubleshooting the Cisco Wireless IP Phone 7920" for assistance with finding the cause of the problem.

Use the following steps to perform a site survey verification:

	Site Survey Verification
Step 1	Check that Cisco Wireless IP Phones associate with all APs in the WLAN.
Step 2	Check that Cisco Wireless IP Phones authenticate with all APs in the WLAN.
Step 3	Check that Cisco Wireless IP Phones register with Cisco CallManager.
Step 4	Check that Cisco Wireless IP Phones can make stationary phone calls with good quality audio.
Step 5	Check that Cisco Wireless IP Phones can make roaming phone calls with good quality audio and no disconnections.

	Site Survey Verification
Step 6	Perform a load test by having multiple Cisco Wireless IP Phones place calls, especially in areas designated for high density use.
Step 7	Have users provide feedback when using their Cisco Wireless IP Phones.

Related Topics

- Using the Cisco Wireless IP Phone 7920 Site Survey Utility, page 6-16
- Requirements for an Optimal Wireless Voice Environment, page 6-18
- *Cisco Wireless IP Phone 7920 Design and Deployment Guide*

Using the Cisco Wireless IP Phone 7920 Site Survey Utility

The Cisco Wireless IP Phone 7920 includes a site survey utility within the Network Config menu that provides information about the access points currently within in range of the phone. To use the site survey utility, follow these steps.

Procedure

Step 1 Configure the Cisco Wireless IP Phone 7920 with the same SSID and encryption/authentication settings as the APs.

Step 2 Power on the phone so that it associates with the WLAN.

Step 3 Press the **Menu** softkey.

Step 4 Choose **Network Config > Site Survey**.

The phone displays a list of access points within range that have the same SSID and security settings as the phone. See the following sample site survey list.

```
1(A),abcd...20,0
6(C),abcd...51,0*
11(A),abcd...10,0
```

The display provides the following information about the APs.

AP Channel	Channel State	SSID	Received Signal Strength Indication (RSSI)	Channel Utilization	Connect AP
1	Active (A)	abcd1234	20	0	
6	Connected (C)	abcd1234	51	0	*
11	Active (A)	abcd1234	10	0	

Step 5 To see more information about an AP, scroll to the desired line and press **Detail**. The following information appears for the specific AP.

```
SSID: abcd1234
Channel:6 (C)
RSSI:51 CU:0
MAC:000a11b22c33444 (C)
```

Note The complete SSID and the MAC address are provided. When two or more APs are on the same connected channel, the (C) next to the MAC address indicates that the phone is connected to this AP.

Step 6 To verify the ability to roam between APs, walk through all areas where phones will be used and take readings. Approach areas from different directions to assure successful roaming conditions.

Step 7 Adjust AP and antenna placement and AP power settings to meet the ideal wireless voice environment as described in Requirements for an Optimal Wireless Voice Environment, page 6-18.

In addition to the Cisco Wireless IP Phone 7920 site survey utility, you can also use the Cisco Aironet Client Utility Site Survey Utility from a laptop PC. Refer to the section on “Performing a Site Survey” in the *Cisco Aironet Wireless LAN Client Adapters Installation and Configuration Guide* for your system.

Related Topic

- Site Survey Verification Steps, page 6-15

Requirements for an Optimal Wireless Voice Environment

When you perform a post-installation site survey, use the following guidelines to verify that you have adequate access point coverage for roaming Cisco Wireless IP Phones. These guidelines will help you have a successful voice deployment in your wireless environment.

Note For more detailed information about the wireless voice requirements, refer to the *Cisco Wireless IP Phone 7920 Design and Deployment Guide*

- Minimum of two access points on non-overlapping channels appear in the 7920 Site Survey utility at all times.
- No more than one AP per overlapping channel with a radio signal strength indicator (RSSI) less than 35.
- Two of the APs, including the connected (C) AP must have an RSSI of greater than 35. Two APs insure that phones can roam easily and that a backup AP is available when one AP is busy or unavailable.
- The available link speed must be at 11 Mbps at all times.
- AP coverage should overlap by 20 percent.
- The packet error rate (PER) should be no higher than one percent.
- The minimum signal to noise ratio (SNR) should be 25 db.
- The transmit power should be the same for both the AP and phones.
- All APs must have diversity antennas and must use the diversity setting.
- In a high traffic area such as a conference room, use additional APs to balance the load.

Related Topics

- Site Survey Verification Steps, page 6-15
- Overview of a Wireless LAN, page 1-4
- Interacting with the Cisco Aironet Access Point, page 2-2
- Voice Quality in a Wireless Network, page 2-5

Configuring Features and Users

After you install Cisco IP Phones in your network, configure their network settings, and add them to Cisco CallManager, you must use the Cisco CallManager Administration application to configure telephony features, and assign users.

This chapter provides an overview of these configuration and set up procedures. Cisco CallManager documentation provides detailed instructions for these procedures.

For suggestions about how to provide users with information about features, and what information to provide, see Appendix A, “Providing Information to Users Via a Website.”

For information about setting up phones in non-English environments, see Appendix B, “Supporting International Users.”

This chapter includes the following topics:

- Configuring Telephony Features Using Cisco CallManager Administration, page 7-2
- Creating Custom Phone Rings, page 7-4
- Adding Users to Cisco CallManager, page 7-6

Configuring Telephony Features Using Cisco CallManager Administration

After you add Cisco IP Phones to Cisco CallManager, you can add functionality to the phones. Table 7-1 includes a list of supported telephony features, many of which you can configure using Cisco CallManager Administration. The Feature column lists the name of the feature with its description. The Reference column lists Cisco CallManager documentation that contains configuration procedures and related information.

For information about using most of the features on the phone, refer to *Cisco Wireless IP Phone 7920 Guide*.

Table 7-1 Configuring Telephony Features Using Cisco CallManager Administration

Feature	Description	Reference
Barge	Adds users to an active call on a shared line. Set the built-in bridge service parameter to make this system-wide feature available or enable the built-in bridge for individual phones. **Note** Cisco Wireless IP Phone 7920 users can use the Barge feature only with calls that are initiated from a desktop phone with the built-in bridge enabled.	• Refer to *Cisco CallManager Administration Guide*. • Refer to *Cisco CallManager Features and Services Guide*.
Call Forward	Forwards all calls to the designated directory number.	Refer to *Cisco CallManager Administration Guide*.
Call Hold	Places an active call on hold.	Requires no configuration, unless you want to use music on hold. See "Music-on-Hold" in this table for information.
Call Park	Places the call on hold so that anyone connected to the Cisco CallManager system can retrieve the call.	• Refer to *Cisco CallManager Administration Guide*. • Refer to *Cisco CallManager Features and Services Guide*.

Table 7-1 Configuring Telephony Features Using Cisco CallManager Administration (continued)

Feature	Description	Reference
Call Pickup	Picks up incoming calls within a group.	• Refer to *Cisco CallManager Administration Guide*. • Refer to *Cisco CallManager System Guide*.
Call Waiting	Receives a second incoming call on the same line without disconnecting the first call.	• Refer to *Cisco CallManager Administration Guide*. • Refer to *Cisco CallManager System Guide*.
Caller ID	Displays the telephone number and the name of the caller.	Refer to *Cisco CallManager Administration Guide*.
Conference	Initiates an ad hoc conference and then conferences in other participants one at a time.	• Refer to *Cisco CallManager Administration Guide*. • Refer to *Cisco CallManager System Guide*.
Group Call Pickup	Allows users to pick up incoming calls within their own group or in other groups.	• Refer to *Cisco CallManager Administration Guide*. • Refer to *Cisco CallManager System Guide*.
Meet-Me Conference	Allows participants to dial a Meet-Me conference number at a pre-determined time to join the conference call.	Refer to *Cisco CallManager Administration Guide*.
Message Waiting	Indicates that one or more voice messages are waiting for a user.	• Refer to *Cisco CallManager Administration Guide*. • Refer to *Cisco CallManager System Guide*.
Music-on-Hold	Plays music while callers are on hold.	Refer to *Cisco CallManager Features and Services Guide*.
Shared Lines	Enables the same extension number to appear and ring on a wireless IP phone and a desktop IP phone.	• Refer to *Cisco CallManager Administration Guide*. • Refer to *Cisco CallManager System Guide*.

Table 7-1 Configuring Telephony Features Using Cisco CallManager Administration (continued)

Feature	Description	Reference
Redial	Redials the last number dialed on the Cisco IP Phone.	Requires no configuration.
Transfer	Transfers a call to another extension or phone number.	Requires no configuration.
Voice Messaging System	Enables callers to leave messages if calls are unanswered.	• Refer to *Cisco CallManager Administration Guide*. • Refer to *Cisco CallManager System Guide*.

Note For detailed information about using telephony features on the wireless IP phone, refer to the *Cisco Wireless IP Phone 7920 Guide*.

Related Topics

- Creating Custom Phone Rings, page 7-4
- Adding Users to Cisco CallManager, page 7-6

Creating Custom Phone Rings

You can customize the phone ring types available at your site by using a set of phone ring sounds that are provided by Cisco CallManager or by creating your own pulse code modulation (PCM) files and editing the RingList.xml file. Refer to *Cisco CallManager Features and Services Guide* for more information about customized ring tones.

For wireless phone users in noisy environments, you can download a set of louder ring tones. For information about how to download these ring tones, see the "Downloading Loud Ring Tones" section on page 7-5.

Downloading Loud Ring Tones

The Cisco Wireless IP Phone 7920 running on Cisco CallManager Release 3.3(3) SR 1 or later provides support for special loud ring tones. The loud ring tones play at 136 dBA after being initially played at 125 dBA for 4 seconds; these are intended for use in noisy customer environments that require loud ring tones.

Use this procedure to load the loud ring tones on the Cisco Wireless IP Phone 7920.

Procedure

Step 1 Download the loud ring tones zip file and Readme file from CCO at this URL:

http://www.cisco.com/cgi-bin/tablebuild.pl/ip-7900ser-crypto.

Step 2 Extract the ring tone files to your hard disk.

Step 3 To stop the TFTP service, from Cisco CallManager Administration, choose **Applications > Serviceability> Tools > Control Center**. Right-click **Cisco TFTP** and click **Stop** .

Step 4 Back up your current ring list file (*ringlist.xml)* because the new ring list file might not include all of your ring tones.

Step 5 Upgrade the Cisco Wireless IP Phone 7920 to the latest version firmware image file. See the "Installing the New Firmware Image with Cisco CallManager 3.3(3) Service Release 1 and Later" section on page C-1 for additional information.

Step 6 Copy the special loud ring tone files (*loudxxx.raw*) and the associated *ringlist.xml* file into the C:\program files\Cisco\TFTPPath directory on the Cisco CallManager server.

Note You must *copy* the ring tone files, not *move* them. If the ring tone files are moved, they will not inherit the correct permissions.

Step 7 To restart the Cisco TFTP server, choose **Applications > Serviceability> Tools > Control Center**. Right-click **Cisco TFTP** and click **Restart**

Step 8 To download and select a loud ring tone as the current ring tone, power on the Cisco Wireless IP Phone 7920.

Step 9 Choose **Menu > Phone Settings > Ring Tones > Download Ring Tone**. The loud ring tones *(loudxxx.raw)* should be available for download on the phone.

Step 10 From the Download Ring Tone list, scroll to and select the desired loud ring tone. A check mark appears by the active ring tone.

Step 11 From the Cisco Wireless IP Phone 7920, choose **Menu > Profiles** to adjust the ring volume.

Note Make sure the ring volume is tuned to the maximum setting. Alternatively, you can choose the "Outdoors" profile, which has the maximum volume setting preset.

For additional information about setting the ring volume on the phone, refer to Chapter 7, "Using and Changing Profiles," in the *Cisco Wireless IP Phone 7920 Guide*.

Related Topics

- Configuring Telephony Features Using Cisco CallManager Administration, page 7-2
- Adding Users to Cisco CallManager, page 7-6

Adding Users to Cisco CallManager

The Cisco CallManager User Options web pages allow each user to perform the following actions:

- Set up speed dial
- Set up call forwarding numbers

To set up these features, you must first add users to Cisco CallManager, using either of the following methods:

- To add users individually, use the Cisco CallManager Administration application and select **User >Add a New User**.

  Refer to *Cisco CallManager Administration Guide* for more information about adding users. Refer to *Cisco CallManager System Guide* for details about user information.

- To add users in batches, use the Bulk Administration Tool. This method also enables you to set an identical default password for all users.

  Refer to *Bulk Administration Tool User Guide* for details.

Related Topics

- Configuring Telephony Features Using Cisco CallManager Administration, page 7-2
- Creating Custom Phone Rings, page 7-4
- Downloading Loud Ring Tones, page 7-5

Viewing Status, Statistics, and Firmware Information on the Cisco Wireless IP Phone 7920

You can obtain network information, and verify the installed firmware version by using the Phone Settings menu on the Cisco Wireless IP Phone 7920.

This chapter includes these topics:

- Viewing the Current Configuration, page 8-1
- Viewing Network Statistics, page 8-2
- Viewing Firmware Versions, page 8-3
- Viewing the Hardware Information, page 8-4

Viewing the Current Configuration

Use the Phone Status menu and current configuration option to determine the name of the configuration file for the Cisco Wireless IP Phone 7920.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Phone Settings** > **Phone Status**.

Step 3 Select **Current Config File**.

The phone displays the name of the configuration file in the following format:

SEPDefault.cnf.xml or SEP*macaddress*.cnf.xml

Step 4 To exit the Current Config File screen, press the **Back** softkey.

Related Topics

- Viewing Network Statistics, page 8-2
- Viewing Firmware Versions, page 8-3
- Viewing the Hardware Information, page 8-4

Viewing Network Statistics

The Network Statistics screen on the Cisco Wireless IP Phone 7920 provides information about the phone and network performance.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Phone Settings** > **Phone Status**.

Step 3 Select **Network Statistics**; the list of statistics appears.

Step 4 Use the Navigation button to scroll through the items in the Network Statistics screen.

Table 8-1 describes the items that appear in this screen.

Step 5 To exit the Network Statistics screen, press the **Back** softkey.

Table 8-1 Network Statistics Screen Items

Item	Description
Up Time	Amount of elapsed time since the phone connected connected to Cisco CallManager
TxPkts	Number of packets transmitted from the phone
RxPkts	Number of packets received by the phone
Aged Pkts	Number of packets that timed-out and were not sent
Bcast Rx	Number of broadcast packets received
Tx Failed	Number of packet transmissions that failed
Ack Failed	Number of packet acknowledgements that failed
Retry Cnt	Number of times the phone retried to send packets

Related Topics

- Viewing Firmware Versions, page 8-3
- Viewing the Hardware Information, page 8-4
- Viewing the Current Configuration, page 8-1

Viewing Firmware Versions

You can verify the firmware versions that are used on the Cisco Wireless IP Phone 7920 by viewing the Firmware Info screen.

The firmware version name is in the following format:

`7920.x.x-yy-zz`

where *x.x* is the supported version of Cisco CallManager (for example, 4.0), *yy-zz* is the phone firmware version (for example, 01-08). The following is an example of a firmware image name:

`7920.4.0-01-08`

To view the firmware information, use the following steps.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Phone Settings** > **Phone Status**.

Step 3 Select **Firmware Info.**

To view one of the following, scroll to the item and press **Select**:

- **Firmware Version**—Phone firmware version running in the phone
- **BSP Load ID**—Board support package running in the phone
- **Boot Load ID**—Version of boot loader in the phone.

Step 4 To exit the Firmware Info screens, press the **Back** softkey.

Related Topics

- Viewing the Hardware Information, page 8-4
- Viewing the Current Configuration, page 8-1
- Viewing Network Statistics, page 8-2

Viewing the Hardware Information

The Hardware Info screen in the Phone Status screen provides the hardware release information.

To verify the hardware version, use the following steps.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose **Phone Settings** > **Phone Status**.

Step 3 Select **Hardware Info**. The number of the hardware release displays.

Step 4 To exit the Hardware Info screen, press the **Back** softkey.

Related Topics

- Viewing the Current Configuration, page 8-1
- Viewing Network Statistics, page 8-2
- Viewing Firmware Versions, page 8-3

Troubleshooting the Cisco Wireless IP Phone 7920

This chapter provides information that can assist you in troubleshooting problems with your Cisco Wireless IP Phone, in your IP telephony network, or with using the Cisco 7920 Configuration Utility.

For additional troubleshooting information, you can refer to the *Wireless 7920 Design and Deployment Guide* and the *Cisco CallManager Troubleshooting Guide*.

This chapter includes the following sections:

- Resolving Startup and Connectivity Problems, page 9-2
- Troubleshooting Tips for the Cisco Wireless IP Phone 7920, page 9-15
- Logging Information for Troubleshooting, page 9-18
- Erasing the Local Configuration, page 9-19
- Administration Options on the Phone Menus, page 9-20
- Where to Go for More Troubleshooting Information, page 9-29

Resolving Startup and Connectivity Problems

After installing a Cisco Wireless IP Phone on your network and adding it to Cisco CallManager, the phone should start up as described in the "Understanding the Phone Startup Process" section on page 2-9. If the phone does not start up properly, see the following sections for troubleshooting information:

- Symptom: The Cisco Wireless IP Phone Does Not Complete the Normal Start Up Process, page 9-2
- Symptom: The Cisco Wireless IP Phone Does Not Associate with a Cisco Aironet Access Point, page 9-3
- Symptom: The Cisco Wireless IP Phone Does Not Register with Cisco CallManager, page 9-4

Symptom: The Cisco Wireless IP Phone Does Not Complete the Normal Start Up Process

When a Cisco Wireless IP Phone connects to the wireless network, the phone should go through its normal startup process and the LCD screen should display information. If the phone does not complete the startup process, the cause might be due to low RF signal strength, network outages, a dead battery in the phone, or the phone might not be functional.

To determine whether the phone is functional, follow these suggestions to systematically eliminate these potential problems:

1. Verify that the wired network is accessible by placing calls to and from other wired Cisco IP Phones.
2. Verify that the wireless network is accessible:
   - Power on a another previously functional Cisco Wireless IP Phone 7920 to verify that the access point is active.
   - Power on the Cisco Wireless IP Phone that will not start up and move to a different access point location that is known to be good.
3. Verify that the phone is receiving power:
   - Insert a new or fully charged battery in the Cisco Wireless IP Phone that will not start up.

- If you are using the battery, try plugging in the external power supply instead.

If, after attempting these solutions, the phone still does not start up, contact a Cisco technical support representative for additional assistance.

Symptom: The Cisco Wireless IP Phone Does Not Associate with a Cisco Aironet Access Point

After the Greeting Message displays, if a phone continues to cycle through messages displaying on the LCD screen, the phone is not associating with the AP properly. The phone cannot successfully start up unless it is associates and authenticates with an AP.

Verifying Access Point Settings

The Cisco Wireless IP Phone 7920 must first authenticate and associate with an access point before it can obtain an IP address. The phone follows this start up process with the AP:

- Scans for an AP
- Authenticates using either LEAP or WEP
- Obtains an IP address

Check the SSID settings on the AP and on the phone to be sure the SSID matches.

Check the authentication type settings on the AP and on the phone to be sure authentication/encryption settings match.

If using static WEP, check the WEP key on the and phone to be sure it matches the WEP key on the AP. Reenter the WEP key on the phone to be sure it is correct.

Error Messages During Authentication

If you see the following error messages, check the follow problems:

Authentication failed, No AP found

- Check if CCKM and ciphers are enabled on the AP. These features are not supported.

- Check that the correct SSID is entered on the phone.
- Check that the WEP settings on the phone and the AP match.
- If using LEAP, check that the correct LEAP username and password are entered on phone.

Enter LEAP password

- If you are using LEAP, you might need to enter the LEAP user name on the phone in the *domain\username* format.
- Check that the correct LEAP username and password are entered on phone.

Cannot support all requested capabilities

Check that TKIP/MIC or CKIP/CMIC are not enabled for the voice VLAN SSID on the AP. The Cisco Wireless IP Phone 7920 does not support these features.

Symptom: The Cisco Wireless IP Phone Does Not Register with Cisco CallManager

If a phone proceeds past the first stage (authenticating with AP), and, continues to cycle through the messages displaying on the LCD screen, the phone is not starting up properly. The phone cannot successfully start up unless it is connected to the Ethernet network and it has registered with a Cisco CallManager server.

These sections can assist you in determining the reason the phone is unable to start up properly:

- Registering the Phone with Cisco CallManager, page 9-5
- Checking Network Connectivity, page 9-5
- Verifying TFTP Server Settings, page 9-5
- Verifying IP Addressing and Routing, page 9-6
- Verifying DNS Settings, page 9-7
- Verifying Cisco CallManager Settings, page 9-7
- Cisco CallManager and TFTP Services Are Not Running, page 9-8
- Creating a New Configuration File, page 9-9

Registering the Phone with Cisco CallManager

A Cisco Wireless IP Phone 7920 can register with a Cisco CallManager server only if the phone has been added to the server or if auto-registration is enabled. If you see the error message, "Registration Rejected," review the information and procedures in the "Adding Users to Cisco CallManager" section on page 7-6 to ensure that the phone has been added to the Cisco CallManager database.

The Cisco Wireless IP Phone 7920 can show up in Cisco CallManager as a Cisco IP Phone 7960. In Cisco CallManager versions prior to 3.3(3) SR 1, the 7920 phone device was not available, so wireless IP Phones were configured as Cisco IP Phone 7960s. See the "Support for the Cisco 7920 Phone Type" section on page 2-14 for more information and how to correct this problem.

To verify that the phone is in the Cisco CallManager database, choose **Device > Phone > Find** from Cisco CallManager Administration to search for the phone based on its MAC Address. (To determine the MAC address of a phone, see the "Viewing the Media Access Control (MAC) Address" section on page 5-14.)

If the phone is already in the Cisco CallManager database, its configuration file may be damaged. See the "Creating a New Configuration File" section on page 9-9 for assistance.

Checking Network Connectivity

If the network is down between the AP and the TFTP server or Cisco CallManager, the phone cannot start up properly. Ensure that the network is currently running.

Verifying TFTP Server Settings

The Cisco Wireless IP Phone 7920 uses the TFTP server setting to identify the primary TFTP server to use. If the TFTP server does not respond to the request, then the CallManager1 (CM1) shows as TFTP_AS_CM. The phone tries to create a TCP connection to the TFTP IP address and then to the gateway. If Cisco CallManager service is not running on the TFTP server, or if SRST is not running on the gateway, the Cisco Wireless IP Phone may continually cycle while attempting to contact the identified TFTP server.

The Cisco Wireless IP Phone 7920 does not cache the IP information passed from the DHCP server, so the TFTP request must be sent and responded to every time the phone power cycles.

If you have assigned a static IP address to the phone, you must manually enter this setting. See the "Configuring Static Settings" section on page 5-9.

If you are using DHCP, the phone obtains the address for the TFTP server from the DHCP server. Check the IP address configured in Option 150 or Option 66. Refer to *Configuring Windows 2000 DHCP Server for Cisco Call Manager* available at this URL:

http://www.cisco.com/warp/customer/788/AVVID/win2000_dhcp.html

You can also enable the phone to use an alternate TFTP server. Such a setting is particularly useful if the phone was recently moved from one location to another.

For information about determining and changing TFTP server settings, see "Configuring TFTP Options" section on page 5-13 or "Viewing the Current Configuration" section on page 8-1.

Verifying IP Addressing and Routing

You should verify the IP addressing and routing settings for the Cisco Wireless IP Phone 7920. If you are using DHCP, the DHCP server should provide these values. If you have assigned a static IP address to the phone, you must enter these values manually.

Note When the Cisco Wireless IP Phone loses the RF signal, the phone will not release the DHCP unless it reaches the time-out state.

Check for the following problems:

- **DHCP Server**—If you have assigned a static IP address to the phone, you do not need to enter a value for the DHCP Server option. However, if you are using a DHCP server, this option must have a value. If it does not, check your IP routing and VLAN configuration. Refer to *Troubleshooting Switch Port Problems*, available at this URL:
  http://www.cisco.com/warp/customer/473/53.shtml
- **IP Address, Subnet Mask, Primary Gateway**—If you have assigned a static IP address to the phone, you must manually enter settings for these options. See the "Configuring Static Settings" section on page 5-9.

If you are using DHCP, check the IP addresses distributed by your DHCP server. Be aware of DHCP conflicts and duplicate IP addresses. Refer to *Understanding and Troubleshooting DHCP in Catalyst Switch or Enterprise Networks*, available at this URL: http://www.cisco.com/warp/customer/473/100.html#41

For information about determining and changing IP addressing and routing settings, see Chapter 5, "Configuring Network Settings on the Cisco Wireless IP Phone 7920."

Verifying DNS Settings

If you are using DNS to refer to the TFTP server or to Cisco CallManager, you must ensure that you have specified a DNS server. You should also verify that there is a CNAME entry in the DNS server for the TFTP server and for the Cisco CallManager system.

You must also ensure that DNS is configured to do reverse look-ups. The default setting on Windows 2000 is to perform forward-only look-ups.

For information about determining and changing DNS settings, see Chapter 5, "Configuring Network Settings on the Cisco Wireless IP Phone 7920."

Verifying Cisco CallManager Settings

The Cisco Wireless IP Phone 7920 attempts to open a TCP connection to all the Cisco CallManager servers that are part of the assigned Cisco CallManager group. Take one of these actions to verify Cisco CallManager settings:

- On the Cisco Wireless IP Phone 7920, choose **Menu > Network Config > Current Configuration** and look at the **CallManager 1–4** options. (See"Viewing the Current Configuration" section on page 8-1.)
- If none of the Cisco CallManager options contain IP addresses or show Active or Standby, the phone is not properly registered with Cisco CallManager. See the "Registering the Phone with Cisco CallManager" section on page 9-5 for tips on resolving this problem.

Cisco CallManager and TFTP Services Are Not Running

If the Cisco CallManager or TFTP services are not running, phones might not be able to start up properly. However, in such situations, it is likely that you are experiencing a system-wide failure and that other phones and devices are unable to start up properly.

If the Cisco CallManager service is not running, all devices on the network that rely on it to make phone calls will be affected. If the TFTP service is not running, many devices will not be able to start up successfully.

To check that all services are running, use the following procedure.

Procedure

Step 1 From Cisco CallManager Administration, choose **Application** > **Cisco CallManager Serviceability**.

Step 2 Choose **Tools** > **Control Center**.

Step 3 From the Servers column, choose the primary Cisco CallManager server.

The page displays the service names for the server that you chose, the status of the services, and a service control panel to stop or start a service.

Step 4 If a service has stopped, click the **Start** button.

The Service Status symbol changes from a square to an arrow.

Note For more information about services, refer to *Cisco CallManager Administration Guide* for more information.

Creating a New Configuration File

If you continue to have problems with a particular phone that other suggestions in this chapter do not resolve, the configuration file might be corrupted. to create a new configuration file, follow these steps:

Procedure

Step 1 From Cisco CallManager, select **Device > Phone > Find** to locate the phone experiencing problems.

Step 2 Choose **Delete** to remove the phone from the Cisco CallManager database.

Step 3 Add the phone back to the Cisco CallManager database. See the "Adding Users to Cisco CallManager" section on page 7-6 for details.

Step 4 Power cycle the Cisco Wireless IP Phone.

Note When you remove a phone from the Cisco CallManager database, its configuration file is deleted from the Cisco CallManager TFTP server. The directory number (DN) remains in the Cisco CallManager database as an unassigned DN. You can assign these DNs to other devices or delete them from the Cisco CallManager database. You can use the Route Plan Report to view and delete unassigned reference numbers. Refer to *Cisco CallManager Administration Guide* for more information.

Related Topics

- Resolving Startup and Connectivity Problems, page 9-2
- Resolving Voice Quality and Roaming Problems, page 9-10
- Troubleshooting Tips for the Cisco Wireless IP Phone 7920, page 9-15

Resolving Voice Quality and Roaming Problems

Cisco Wireless IP Phone 7920 users might have problems with voice quality and connectivity when roaming with their phones. See the following sections for troubleshooting information:

- Symptom: Cisco Wireless IP Phone Resets Unexpectedly, page 9-10
- Symptom: The Cisco Wireless IP Phone Has Audio Problems, page 9-13
- Symptom: The Cisco Wireless IP Phone Does Not Roam Properly, page 9-14

Symptom: Cisco Wireless IP Phone Resets Unexpectedly

If users report that their phones are resetting during calls or resetting while idle on their desk, you should investigate the cause. If the network connection and Cisco CallManager connection are stable, a Cisco Wireless IP Phone 7920 should not reset on its own.

Typically, a phone resets if it has problems connecting to the AP and Ethernet network or to Cisco CallManager. These sections can help you identify the cause of a phone resetting in your network:

- Verifying Access Point Settings, page 9-10
- Identifying Intermittent Network Outages, page 9-11
- Verifying DHCP Settings, page 9-11
- Checking Static IP Address Settings, page 9-11
- Verifying Voice VLAN Configuration, page 9-11
- Verifying that the Phones Have Not Been Intentionally Reset, page 9-12
- Eliminating DNS or Other Connectivity Errors, page 9-12

Verifying Access Point Settings

Verify that the wireless configuration is correct. For example, check if the particular access point or switch to which the phone is connected is down. See the "Wireless Network and Access Point Configuration" section on page 3-3 for information about AP settings.

Identifying Intermittent Network Outages

Intermittent network outages affect data and voice traffic differently. Your network might have been experiencing intermittent outages without detection. If so, data traffic can resend lost packets and verify that packets are received and transmitted. However, voice traffic cannot recapture lost packets. Rather than retransmitting a lost network connection, the phone resets and attempts to reconnect its network connection.

If you are experiencing problems with the voice network, you should investigate whether an existing problem is simply being exposed.

Verifying DHCP Settings

The following procedure can help you determine if the phone has been properly configured to use DHCP:

1. Verify that you have properly configured the phone to use DHCP. See the "Modifying DHCP Settings" section on page 5-7 for details.
2. Verify that the DHCP server has been set up properly.
3. Verify the DHCP lease duration. Cisco recommends that you set it to 8 days.

   Cisco IP Phones send messages with request type 151 to renew their DHCP address leases. If the DHCP server expects messages with request type 150, the lease will be denied, forcing the phone to restart and request a new IP address from the DHCP server.

Checking Static IP Address Settings

If the phone has been assigned a static IP address, verify that you have entered the correct settings. See the "Configuring Static Settings" section on page 5-9.

Verifying Voice VLAN Configuration

If the Cisco IP Phone appears to reset during heavy network usage (for example, following extensive web surfing on a computer connected to same AP and switch as phone), it is likely that you do not have a voice VLAN or the appropriate QoS settings configured.

By isolating the wireless phones on a separate auxiliary VLAN, you can use QoS to prioritize the voice traffic over data traffic and improve the voice quality. See the "Voice Quality in a Wireless Network" section on page 2-5 for details.

Verifying that the Phones Have Not Been Intentionally Reset

If you are not the only administrator with access to Cisco CallManager, you should verify that no one else has intentionally reset the phones.

Eliminating DNS or Other Connectivity Errors

If the phone continues to reset, check to see if you are using host names or IP addresses for Cisco CallManager servers. Follow these steps to eliminate DNS or other connectivity errors:

Procedure

Step 1 Reset the phone to factory defaults. See the "Erasing the Local Configuration" section on page 9-19 for details.

Step 2 Modify DHCP and IP settings.

a. Disable DHCP. See the "Modifying DHCP Settings" section on page 5-7 for details.

b. Assign static IP values to the phone. See the "Configuring Static Settings" section on page 5-9 for details. Use the same default router setting used for other functioning Cisco IP Phones.

c. Assign a TFTP server. See the "Configuring TFTP Options" section on page 5-13 for details. Use the same TFTP server used for other functioning Cisco IP Phones.

Step 3 On the Cisco CallManager server, verify that the local host files have the correct Cisco CallManager server name mapped to the correct IP address. If you are using host names, you must be using DNS service so that the phone can resolve the host names to their IP addresses. Refer to *Configuring the IP Hosts File on a Windows 2000 CallManager Server*, available at this URL: http://www.cisco.com/warp/customer/788/AVVID/cm_hosts_file.html

Step 4 From Cisco CallManager, choose **System > Server** and verify that the server is referred to by its IP address and not by its host name.

Note Cisco recommends that you configure IP addresses only and not host names to eliminate the DNS resolution in the phone registration process.

Step 5 From Cisco CallManager, select **Device > Phone** and verify that you have assigned the correct MAC address to this Cisco IP Phone.

To determine the MAC address of a phone, see the "Viewing the Media Access Control (MAC) Address" section on page 5-14.

Step 6 Power cycle the phone.

Symptom: The Cisco Wireless IP Phone Has Audio Problems

If users report that when engaged in an active phone call the voice quality is choppy, has static or gaps or there is no audio, use the following suggestions to identify the cause of the problem:

No audio during a connected call

The most common reason for no audio during a connected call is that TKIP and MIC are enabled on the AP. These features are not yet supported on the Cisco Wireless IP Phone 7920. You must disable these features on the AP.

One-way audio during a connected call

Check the AP to see that the transmit power setting matches the transmit power setting on the phone. One-way audio is common when the AP power setting is greater (100mW) than that of the phone (20mW).

Check that the AP is set for ARP caching. See the "Wireless Network and Access Point Configuration" section on page 3-3 for more information.

Check your gateway and IP routing for voice problems.

Check if a firewall or NAT is in the path of the RTP packets. If so, you can use Cisco IOS and PIXNAT to modify the connections so that two-way audio is possible.

Check that the Data Rate setting for the phone and the AP are the same. These settings should match or the phone should be set for Auto.

Check the phone hardware to be sure the speaker is functioning properly. Check the volume settings in the Profiles menu.

Symptom: The Cisco Wireless IP Phone Does Not Roam Properly

If users report that when engaged in an active phone call and walking from one location to another, the voice quality deteriorates or the connection is lost, check the following list to identify the cause of the problem:

Voice quality deteriorates while roaming

Check the RSSI on the destination AP to see if the signal strength is adequate. The next AP should have an RSSI value of 35 or greater.

Check the site survey to determine if the channel overlap is adequate for the phone and the AP to hand off the call to the next AP before the signal is lost from the previous AP.

Check to see if noise or interference in the coverage area is too great.

Delays in voice conversation while roaming

Use the Site Survey Utility on the Cisco Wireless IP Phone 7920 to see if there is another acceptable AP as a roaming option. The next AP should have an RSSI value of 35 or greater to roam successfully.

Check the Cisco Catalyst 4500 switch or other network switch to see if it has the correct version of Supervisor (SUP) blades. The blades must be versions SUP2+ or SUP 3 to prevent roaming delays.

Cisco Wireless IP Phone loses connection with Cisco CallManager while roaming

Check that the RF signal strength is good. Use the Site Survey Tool and check the RSSI value for the next AP.

Check that the next AP has connectivity to Cisco CallManager.

Check that the next AP has the same authentication type as the phone. There might be a mismatch.

Check that the AP is in the same subnet as the previous AP. The Cisco Wireless IP Phone 7920 is capable of Layer 2 roaming only.

If using LEAP authentication, check that the AP is not using filters to block TCP ports. The ACS server uses port 1645 and the RADIUS server uses port 1812.

Related Topics

- Resolving Startup and Connectivity Problems, page 9-2
- Resolving Voice Quality and Roaming Problems, page 9-10
- General Troubleshooting Information, page 9-15

General Troubleshooting Information

The following topics provide general information and tips for troubleshooting the Cisco Wireless IP Phone 7920.

- Troubleshooting Tips for the Cisco Wireless IP Phone 7920, page 9-15
- Logging Information for Troubleshooting, page 9-18
- Erasing the Local Configuration, page 9-19

Troubleshooting Tips for the Cisco Wireless IP Phone 7920

Table 9-1 provides general troubleshooting information for the Cisco Wireless IP Phone.

Table 9-1 Cisco Wireless IP Phone Troubleshooting

Summary	Explanation
Phone gets hot	The phone may get warm when calls are in progress or if the phone is constantly scanning for new APs when the RF signal is weak. Consider adjusting the RF coverage to provide a more stable environment. If the phone is not registered with a Cisco CallManager server, it is constantly scanning and becomes hot.

Table 9-1 Cisco Wireless IP Phone Troubleshooting (continued)

Summary	Explanation
Battery life is shorter than specified	An unstable RF environment can cause the phone to remain in active mode because it is constantly seeking an AP. This reduces the battery life considerably. When leaving an area of coverage, shut down the phone. Vibrate mode can reduce battery life, but back light should not affect the battery. Higher phone transmit power can affect battery life. To maximize idle time on the phone and conserve battery life, you need to optimize the registration time so the phone can go into power save mode more often.
Phone is resetting	The phone resets when it loses contact with the Cisco CallManager software. This lost connection can be due to any network connectivity disruption, including AP problems, switch outages, and switch reboots. See the "Symptom: Cisco Wireless IP Phone Resets Unexpectedly" section on page 9-10.
Time on phone is incorrect	Sometimes the time or date on the phone is incorrect. The Cisco Wireless IP Phone 7920 gets its time and date when it registers with Cisco CallManager. Power cycle the phone to reset the time or date.
Ring volume is too low	To see if the ring volume is set correctly on the phone, choose **Menu** > **Profiles** > **Ring Volume**. Choose **6** for the highest volume. You can download loud ring tones from the Software Download page on Cisco.com. See the "Downloading Loud Ring Tones" section on page 7-5.

Table 9-1 Cisco Wireless IP Phone Troubleshooting (continued)

Summary	Explanation
Phone does not ring	To see if the phone is set to ring, choose **Menu** > **Profiles** > **Incoming Call Alert**, and check that it is set to **On**. To see if a ring tone has been set for the phone, choose **Menu** > **Phone Settings** > **Ring tones**. If none is set, add a ring tone for the phone. To see if the speaker is functioning properly, adjust the ring volume settings to the highest level. Enable keypad tones or call the phone to check the speaker.
One-way audio on phone	Check that the speaker is functioning properly. Adjust the speaker volume setting and call the phone to check the speaker. Check that ARP caching has been set on the AP. See "Wireless Network and Access Point Configuration" section on page 3-3.
Delays when roaming from one location to another	If Cisco Catalyst 4500 series switches are being used as the main Layer 3 switches in the network, ensure that the supervisor blades are a minimum SUP2+ or SUP 3 version. The Cisco Wireless IP Phone 7920 (or any wireless client) experiences roaming delays when an earlier version (SUP 1 or SUP2) blade is used.
Phone is locked	If you press a key and see the message, "KeyLocked," the keypad is temporarily locked. Press and hold the pound (#) key to unlock the keypad without a password. When prompted with the message, "Keylock off?" press **OK** to unlock the keypad. When powering on the phone, if you are prompted to enter a password, try entering the default password, **12345** and pressing **OK**. If this password unlocks the phone, the phone associates with the AP. If these options do not unlock the phone, you must call Cisco Technical Assistance Center (TAC) to have the phone unlocked. **Note** When TAC uses the master password to unlock a phone, all configuration is lost including the phone book entries.

Table 9-1 Cisco Wireless IP Phone Troubleshooting (continued)

Summary	Explanation
Phone firmware downgrades	After applying a Cisco CallManager upgrade or patch, that is older than the current Cisco Wireless IP Phone 7920 firmware, the phones could automatically downgrade to the load contained in the patch. Check the Cisco CallManager 7920 device default image and the OS7920.txt file in the TFTP folder to fix this problem.

Related Topics

- Logging Information for Troubleshooting, page 9-18
- Erasing the Local Configuration, page 9-19

Logging Information for Troubleshooting

The following options can help you gather troubleshooting information:

- Using a System Log Server, page 9-18
- Using the Trace Route Option on the Cisco Wireless IP Phone, page 9-18

Using a System Log Server

To gather information about problems with the wired network that can cause roaming delays or no connectivity, set up a system log server. Enable “syslog” on the network switches and access points that is logged to the system log server. Also enable Network Time Protocol (NTP) so that all APs and switches use the same times.

Using the Trace Route Option on the Cisco Wireless IP Phone

When you are experiencing problems with registering with Cisco CallManager, or call connections, you can use this function to trace the path of a packet from the phone to Cisco CallManager. The result shows the number of hops and the IP address of each hop to reach the Cisco CallManager server. You can use this information to check connectivity between the phone, Cisco CallManager servers and gateways during a call.

For information about using the Trace Route option, see the "Using the Trace Route Option on the Cisco Wireless IP Phone" section on page 9-18.

Erasing the Local Configuration

You can clear all locally stored configuration options in a phone by using the Phone Settings menu. When you use the restore to factory default option, all user-defined entries in Speed Dial, Profiles, Phone Settings, and Call History are erased, but the Phone Book entries remain.

Note You can also use the Cisco 7920 Configuration Utility to erase the local configuration.

To erase the local configuration by using the phone menu, use these steps.

Procedure

Step 1 Press **Menu** > **Phone Settings** > **Factory Default**.

The phone displays "Restore to Default?"

Step 2 Press the **OK** softkey. All settings are deleted.

The phone cycles through normal startup procedures.

Step 3 Press **Menu** > **Network Config** to reconfigure the network settings for your WLAN.

Caution Erasing the local configuration removes user-defined changes in speed dial, phone settings, and profiles that are made locally on the Cisco Wireless IP Phone. All call history entries are removed, and all network settings are set back to the default values. Only the personal phone book entries are retained. You must reconfigure the network settings for the phone to access the network again.

Related Topics

- Resolving Startup and Connectivity Problems, page 9-2

- Resolving Voice Quality and Roaming Problems, page 9-10
- Administration Options on the Phone Menus, page 9-20
- Troubleshooting Tips for the Cisco 7920 Configuration Utility, page 9-24

Administration Options on the Phone Menus

Administrative options in the Network Config and Phone Settings menus are hidden by default to prevent users from making changes that could affect the operation of a phone. You must start the administration mode on the phone to use the options. For more information, see the following topics:

- Accessing Hidden Options on the Phone Menus, page 9-20
- Using Hidden Options on the Phone Menus, page 9-21

Accessing Hidden Options on the Phone Menus

To open administrative options on the Cisco Wireless IP Phone 7920, perform the following steps. These settings are hidden automatically when you power off the phone.

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Press *, #, and then #.

Step 3 Then press the green key to open administrative mode.

Hidden options in the Network Config and Phone Settings menu appear.

Step 4 To hide the options, press any key in the first level submenu. Then press the green key.

Related Topics

- Using Hidden Options on the Phone Menus, page 9-21
- Troubleshooting Information for Basic Problems, page 9-25

Using Hidden Options on the Phone Menus

The hidden administrative settings are for troubleshooting only. You can temporarily change some parameter settings, such as power save while you are in administrative mode. When the phone is powered off and powered on, the default settings for the phone are restored.

The following hidden options are available to administrators for troubleshooting purposes:

- Disabling the Power Save Mode, page 9-21
- Performing a Trace Route, page 9-22
- Selecting the Data Rate, page 9-22
- Selecting the Transmit Power, page 9-23
- Changing the Cisco Discovery Protocol (CDP) Settings, page 9-23

Note When you access the administrative mode functions on the Cisco Wireless IP Phone 7920, you might see additional hidden options and administrative mode parameters beyond those that are listed. TAC uses these options for troubleshooting phone and wireless network issues.

Disabling the Power Save Mode

Disabling the power save mode temporarily keeps the phone radio in active mode and prevents it from going into standby mode. The battery life lasts only as long as the talk time duration of 3.5 hours for a standard battery.

To disable the Power Save mode, follow these steps:

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose the **Phone Settings** menu.

Step 3 Scroll to **Power Save** and press **Select** to open the Power Save menu.

Step 4 Scroll to **Disable** to disable the Power Save mode.

Step 5 Press **Save** to keep the change.

A check mark appears next to the selected Power Save mode.

When you power off the phone, the Power Save setting returns to Enabled.

Performing a Trace Route

You can use this function to trace the path of a packet from the phone to Cisco CallManager. The result shows the number of hops and the IP address of each hop to reach the Cisco CallManager server.

To perform a trace route, follow these steps:

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose the **Network Config** menu.

Step 3 Scroll to **Trace Route** and press **Select** to open the Trace Route menu.

Step 4 Enter the trace route IP address such as the destination Cisco CallManager and then press **Save**.

The phone begins the tracing process, and the trace result is displayed.

Step 5 Press **Back** to return to the Network Config menu.

Selecting the Data Rate

The default setting is auto in which the phone automatically adjusts to the data rate of the AP. You can change this setting to a value lower than 11 Mbps, but it will reduce the voice quality and the number of concurrent phone calls that the AP can handle.

To select the data rate, follow these steps:

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose the **Network Config** menu.

Step 3 Scroll to and select **802.11b Configuration > Wireless Settings > Data Rate**.

Step 4 Scroll to the desired data rate option: 1 megabits per second (Mbps), 2 Mbps, 5.5 Mbps, 11Mbps or Automatic

Step 5 Press **Select** to make the change.

A check mark appears next to the selected data rate.

Selecting the Transmit Power

You might need to change the transmit power to offset the use of a higher gain antenna on the AP. To change the transmit power of the phone, follow these steps:

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose the **Network Config** menu.

Step 3 Scroll to and select **802.11b Configuration > Wireless Settings > Transmit Power**.

Step 4 Scroll to the desired transmit power option: 1 milliwatt (mW), 5 mW, 20 mW, 50 mW, or 100 mW. The default setting is 20 mW.

Step 5 Press **Select** to make the change.

A check mark appears next to the selected transmit power.

Changing the Cisco Discovery Protocol (CDP) Settings

Some network devices do not use CDP. To change whether the phone transmits CDP packets and settings associated with CDP, follow these steps:

Procedure

Step 1 Press the **Menu** softkey.

Step 2 Choose the **Network Config** menu.

Step 3 Scroll to **CDP TX Enable/Disable** and press **Select**.

Step 4 Scroll to **Enable** or **Disable** and press **Select**.

A check mark appears next to the selected item. The default is Enable. Press Back to return to the menu.

Step 5 Scroll to **CDP TTL** (time to live) and press **Select**.

Step 6 Press **Edit** to enter the appropriate value (default is 180). Then press **Back**.

Step 7 Scroll to **CDP TX Interval** and press **Select**.

Step 8 Press **Edit** to enter the appropriate value (default is 60). Then press **Back**.

Related Topics

- Resolving Startup and Connectivity Problems, page 9-2
- Resolving Voice Quality and Roaming Problems, page 9-10
- General Troubleshooting Information, page 9-15
- Troubleshooting Tips for the Cisco 7920 Configuration Utility, page 9-24

Troubleshooting Tips for the Cisco 7920 Configuration Utility

This section identifies possible problems with the Cisco Wireless IP Phone 7920 and the Cisco 7920 Configuration Utility. Possible solutions and a list of error codes are provided for those problems. This section contains the following topics:

- Troubleshooting Information for Basic Problems, page 9-25
- Windows User Interface Operation Errors, page 9-25
- TCP Connection Errors, page 9-25
- File Format or File Access Errors, page 9-26

- TFTP or Network Errors, page 9-27
- Security Errors, page 9-28

Troubleshooting Information for Basic Problems

Mismatched basic settings are the most common causes of loss of connectivity with the Cisco Wireless IP Phone 7920. If the Cisco 7920 Configuration Utility does not communicate with the client phone, check the following settings:

- USB Driver
- PC Internet Protocol

See the "Installing the USB Driver" section on page 4-5 for instructions on setting up the system.

Windows User Interface Operation Errors

When you are entering values into the Windows fields, you might encounter the following errors. Table 9-2 lists error codes, possible problems, and possible solutions for Windows user interface (UI) operations when working with the Cisco 7920 Configuration Utility.

Table 9-2 Windows UI Operation Errors

Error Code	Possible Problem	Possible Solution
ERR001	String length is too long.	Shorten the string length.
ERR002	Number is out of range.	Enter the number in the proper range.
ERR003	Incorrect IP address format.	Set the IP address in the range of 1.0.0.1 to 255.255.255.255, and set the subnet mask in the range of 1.0.0.0 to 255.255.255.255.

TCP Connection Errors

Table 9-3 lists error codes, possible problems, and possible solutions for TCP connection errors when working with the Cisco 7920 Configuration Utility.

Table 9-3 TCP Connection Errors

Error Code	Possible Problem	Possible Solution
ERR100	The connection has been dropped because of a network failure or because the phone failed to respond.	Check the PC's IP settings. See the "Installing the USB Driver" section on page 4-5.
ERR101	The specified address is already in use.	Close the application that has the same IP address or port number. • TCP: The default IP address for Cisco Wireless IP Phone 7920 is 192.168.1.1; the default port number is 5001. • TFTP: 69 is the default port number.

File Format or File Access Errors

Table 9-4 lists error codes, possible problems, and possible solutions for the configuration file format or file access errors when working with the Cisco 7920 Configuration Utility.

Table 9-4 File Format or File Access Errors

Error Code	Possible Problem	Possible Solution
ERR200	Disk is full, or allocation limit has been exceeded.	Free up disk space for saving files on the computer.
ERR201	Unknown setting parameter in configuration file.	See the "Configuration File Format" section on page 4-29 first. If this is a new setting parameter, you can click the **Skip** button to ignore format checking in the Unknown Setting Window. You can also click the **Delete** button to delete this setting parameter in the Unknown Setting Window.
ERR202	Setting value is not available in configuration file.	See the "Configuration File Format" section on page 4-29.

Table 9-4 File Format or File Access Errors (continued)

Error Code	Possible Problem	Possible Solution
ERR203	No equals sign (=) between setting parameter and setting value.	See the "Configuration File Format" section on page 4-29 first. Add an equals sign (=) between the setting parameter and the setting value.
ERR204	Firmware image checksum error.	Upload the firmware image again, or check to see whether the firmware image is correct.
ERR205	Incorrect firmware image version.	The firmware image version should be available for the current Cisco Wireless IP Phone 7920. Upload the correct version of the firmware image file for your phone.
ERR206	Errors in writing firmware image into Flash memory.	Power on the Cisco Wireless IP Phone 7920 again. Contact your supplier if the error remains.
ERR207	Improper firmware image file size.	Check that the firmware image version is correct for the Cisco Wireless IP Phone 7920 model.
ERR208	The firmware image version number is different from the config load ID number.	Check that the firmware image version is correct for the Cisco Wireless IP Phone 7920 model.
ERR209	The phone is either locked, booting up, or updating the firmware image.	Check to see whether the Cisco Wireless IP Phone 7920 is locked or whether it is performing firmware image upgrade. Upload the firmware image again later.

TFTP or Network Errors

Table 9-6 lists error codes, possible problems, and possible solutions for the TFTP or network errors when working with the Cisco 7920 Configuration Utility.

Table 9-5 TFTP or Network Errors

Error Code	Possible Problem	Possible Solution
ERR300	TFTP fails in importing configuration file.	Import the configuration file again.
ERR301	TFTP fails in uploading firmware image file.	Upload the firmware image again.
ERR302	TFTP fails in uploading ring tone file.	Upload the configuration file again.
ERR303	The lines are busy.	Try to connect later.
ERR304	The memory in the Cisco Wireless IP Phone 7920 is insufficient to upload the firmware image.	Try the upload later.
ERR305	The phone does not respond; connection is closed.	Check the USB cable connection. See the"Using the Cisco 7920 Configuration Utility" section on page 4-15.

Security Errors

Table 9-6 lists error codes, possible problems, and possible solutions for system errors when working with the Cisco 7920 Configuration Utility.

Table 9-6 Security Errors

Error Code	Possible Problem	Possible Solution
ERR900	Unknown username.	Enter the correct user name in the Login window.
ERR901	Password is invalid.	Enter the correct password in the Login window.

Where to Go for More Troubleshooting Information

If you have additional questions about troubleshooting the Cisco IP Phones, several Cisco.com web sites can provide you with more tips.

- Cisco IP Phone Troubleshooting Resources: http://www.cisco.com/pcgi-bin/Support/PSP/psp_view.pl?p=Hardware:IP_Phones&s=Troubleshooting
- Cisco Fixed and Mobile Wireless documentation: http://www.cisco.com/univercd/cc/td/doc/product/wireless/index.htm
- Cisco Products and Technologies (Cisco Voice Applications, including Cisco CallManager): http://www.cisco.com/warp/public/44/jump/voice_applications.shtml
- Cisco Products and Technologies (telephony, including Cisco IP Phones): http://www.cisco.com/warp/public/44/jump/telephony.shtml

Related Topics

- Resolving Startup and Connectivity Problems, page 9-2
- Resolving Voice Quality and Roaming Problems, page 9-10
- General Troubleshooting Information, page 9-15
- Administration Options on the Phone Menus, page 9-20
- Troubleshooting Tips for the Cisco 7920 Configuration Utility, page 9-24

Providing Information to Users Via a Website

If you are a system administrator, you are likely the primary source of information for Cisco IP Phone users in your network or company. It is important to provide current and thorough information to end users.

To successfully use some features on the Cisco IP Phone (such as speed dial numbers and voice messaging system options), users must receive information from you or your network team or be able to contact you for assistance.

Cisco recommends that you create a web page on your internal support site that provides end users with important information about their new Cisco Wireless IP Phone 7920.

Consider adding the following types of information to this site:

- How Wireless IP Phones Operate, page A-1
- How Users Get Copies of Cisco IP Phone Manuals, page A-2
- How Users Configure Phone Features, page A-3
- How Users Access Voice Messages, page A-4

How Wireless IP Phones Operate

Users need to know that their Cisco Wireless IP Phone 7920 operates more like a cell phone than like their desktop phone. Small wireless phones with an antenna allow users walk around a facility while connected to a call. These phones, like cell phones, can approach the edge of the RF signal range and experience static or

poor voice quality. At times, the user might encounter areas where there is no signal and lose the call entirely. The following is a list of calling locations and situations in which wireless phones might experience audio problems:

- Stairwells, elevators, rooms with metal equipment such as file cabinets, or heavy machinery
- Break rooms with microwave ovens, or labs with equipment that emits RF signals within the same ranges.
- Conference rooms or other congested areas where many people are using wireless devices
- Parking garages and outdoor areas where access points are not located or out of range.

The Cisco Wireless IP Phone 7920 has many of the same phone features as the IP phone desktop models, such as Mute, access to voice messaging, and directories. The phone has a limited number of buttons, because of its size. As a consequence, the following are some differences in its operation:

- No line buttons—You must enter the phone number from the key pad and press Send. You do not hear a dial tone.
- No Mute button—You must press the softkey labeled for MuteOn. To turn off mute, you press the softkey labeled MuteOff.
- No Message Waiting light—When you have a voice message, the displays shows, “You have Voice Mail.”
- No speaker phone—You can use a headset for handsfree operation.

Related Topics

- How Users Get Copies of Cisco IP Phone Manuals, page A-2
- How Users Configure Phone Features, page A-3
- How Users Access Voice Messages, page A-4

How Users Get Copies of Cisco IP Phone Manuals

You should provide end users with access to user documentation for the Cisco IP Phones. This documentation includes detailed user instructions for key phone features. See the “Related Documentation” section on page xv for more information.

There are several Cisco IP Phone models available, so to assist users in finding the appropriate documentation on the Cisco website, Cisco recommends that you provide links to the current documentation. If you do not want to or cannot send users to the Cisco website, Cisco suggests that you download the PDF files and provide them to end users on your website.

For a list of available documentation for Cisco IP Phones, go to this URL:

http://www.cisco.com/univercd/cc/td/doc/product/voice/c_ipphon/index.htm

For a list of available documentation for Cisco CallManager, go to this URL:

http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/index.htm

For more information about viewing or ordering documentation, see the "Obtaining Documentation" section on page xvi.

Related Topics

- How Wireless IP Phones Operate, page A-1
- How Users Configure Phone Features, page A-3
- How Users Access Voice Messages, page A-4

How Users Configure Phone Features

End users can perform a variety of activities using the Cisco IP Phone User Options web page. Cisco Wireless IP Phone users can set up speed dial and call forwarding numbers. Keep in mind that configuring settings on a phone using a website might be new for your end users. You need to provide as much information as possible to ensure that they can successfully access and use the User Options web page.

Make sure to provide end users with the following information about the User Options web page:

- The URL required to access the application. This URL is:

  http://*server_name*/CCMUser/, where *server_name* is the host on which the web server is installed.

- A user ID and default password for accessing the application.

  These settings correspond to the values you entered when you added the user to Cisco CallManager (see the "Adding Users to Cisco CallManager" section on page 7-6).

- A description of a web-based, graphical user interface application and how to access it with a web browser.
- An overview of tasks that users can accomplish by using the web page.

You can also refer users to *Customizing Your Cisco IP Phone on the Web*, which is available at this URL:

http://www.cisco.com/univercd/cc/td/doc/product/voice/c_ipphon/english/ipp7960/usopt.pdf

Related Topics

- How Wireless IP Phones Operate, page A-1
- How Users Get Copies of Cisco IP Phone Manuals, page A-2
- How Users Access Voice Messages, page A-4

How Users Access Voice Messages

Cisco CallManager provides the flexibility to integrate with many different voice messaging systems, including the Cisco Unity voice messaging system. Because you can integrate with many different systems, you must provide users with detailed information about how to use your specific system.

You should provide this information to each user:

- How to access the voice messaging system account.
- The initial password for accessing the voice messaging system.

  Make sure that you have configured a default voice messaging system password for all users.

- How the phone indicates that messages are waiting.

  Make sure that you have used Cisco CallManager to set up a message waiting indicator (MWI) method.

For information about setting up the MWI method and the interface to the voice messaging system in Cisco CallManager, refer to the documentation for your system at this URL:

http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/index.htm

If you are using a Cisco Unity voice messaging system, refer to the Cisco Unity documentation for your system for configuring voice messaging and the initial passwords at this URL:

http://www.cisco.com/univercd/cc/td/doc/product/voice/c_unity/index.htm

Refer to the *Cisco Wireless IP Phone 7920 Guide* for information about accessing the voice messaging system from the phone at this URL:

http://www.cisco.com/univercd/cc/td/doc/product/voice/c_ipphon/english/wip7920/guid7920/index.htm

Related Topics

- How Wireless IP Phones Operate, page A-1
- How Users Get Copies of Cisco IP Phone Manuals, page A-2
- How Users Configure Phone Features, page A-3

Supporting International Users

Translated and localized versions of the Cisco Wireless IP Phone 7920 are available in these languages:

- English
- French
- German

You can obtain translated documentation for the Cisco IP Phones at this URL:

http://www.cisco.com/univercd/cc/td/doc/product/voice/c_ipphon/index.htm

Updating Firmware for the Cisco Wireless IP Phone 7920

This section provides the following information about updating firmware for the Cisco Wireless IP Phone 7920.

- Installing the New Firmware Image with Cisco CallManager 3.3(3) Service Release 1 and Later, page C-1
- Upgrading Firmware for the Cisco Wireless IP Phone 7920 with Cisco CallManager Express 3.0, page C-3

Installing the New Firmware Image with Cisco CallManager 3.3(3) Service Release 1 and Later

Use this procedure to load the latest version firmware image for the Cisco Wireless IP Phone 7920 on Cisco CallManager 3.3(3) SR1 and later. You must install the firmware image on all Cisco CallManager servers that run TFTP service.

Note If you are using Cisco CallManager Release 3.3(2) and earlier, you must also use the phone load image helper file *OS7920.txt*. The 7920 device type is not supported in earlier releases of Cisco CallManager.

Procedure

Step 1 Download the firmware installation file *cmterm-7920-sccp.x-x-x.exe* from Cisco.com at the following URL:

http://www.cisco.com/cgi-bin/tablebuild.pl/ip-7900ser-crypto

Step 2 Double-click the .exe file to install the necessary firmware files in Cisco CallManager.

The version firmware image file and load ID file for the Cisco Wireless IP Phone 7920 are copied into the Cisco CallManager TFTPPath directory.

Step 3 Log in to the Cisco CallManager Administration application.

Step 4 From the menu bar, choose **System > Device Defaults**.

The Device Defaults Configuration window appears.

Step 5 Scroll down on the page to Cisco 7920 in the Device Type column. In the Load Information window, verify that the firmware image file name is the updated version.

If the updated firmware image version is not in this field, update this entry.

Note Do not change any of the parameters of the firmware image file.

Note If you need to downgrade the firmware to an earlier version, you must use the Cisco 7920 Configuration Utility to perform the downgrade. When downgrading firmware, the phone configuration entries are lost and the phone resets to factory defaults. You must reconfigure the phone with the Cisco 7920 Configuration Utility or by using the Network Config menu on the phone.

Upgrading Firmware for the Cisco Wireless IP Phone 7920 with Cisco CallManager Express 3.0

If you are using Cisco CallManager Express (CME) 3.0 with Cisco Wireless IP Phone 7920s, you can download the version firmware image file *cmterm_7920.3.3-xx-xx.bin* and the phone load image helper file *OS7920.txt* from Cisco.com at the following URL:

http://www.cisco.com/cgi-bin/tablebuild.pl/ip-iostsp

Note Support for the 7920 device type is available in CME 3.1 and the OS7920.txt file is not required.

Support for the Cisco Wireless IP Phone 7920 with Cisco CallManager Express is limited, and specific caveats apply. Refer to the latest *Cisco Wireless IP Phone 7920 Release Notes for Firmware Release on Cisco CallManager Version*.

Upgrading Firmware on the Cisco Wireless IP Phone 7920

After downloading the new firmware version, you need to upgrade the firmware on the phones. For instructions on upgrading firmware by using the Cisco 7920 Configuration Utility, see the "Uploading the Firmware Image" section on page 4-14.

Note If you need to downgrade the firmware to an earlier version, you must use the Cisco 7920 Configuration Utility. The phone will reset to factory defaults and lose all configuration entries after downgrading the firmware.

Physical and Operating Environment Specifications

The following section describes the technical specifications for the Cisco Wireless IP Phone 7920. Table D-1 shows the physical and operating environment specifications.

Table D-1 Physical and Operating Specification

Specification	Value or Range
Operating temperature	0° to 40°C (32° to 113°F)
Operating relative humidity	10% to 95% (non-condensing)
Storage temperature	-30° to 60°C (22° to 140°F)
Drop specification	1 meter to concrete
Thermal shock	-30 C for 24 hours to up to +70 C for 24 hours
Phone Height	132.1 mm (5.2 in.)
Phone Width	53.3 mm (2.1 in.)
Phone Depth	25.4 mm (1 in.)
Phone Weight (with standard battery)	136.1 g (4.8 oz)

Table D-1 Physical and Operating Specification (continued)

Specification	Value or Range
Power	• 1440/1560mA—Standard lithium ion battery • 1960mA— Extended lithium ion battery • 100-240 VAC, 50-60 Hz, 0.5 A—when using the AC adapter
Distance Requirements	As supported by the 802.11b specification, the Cisco Wireless IP Phones should be within 500 to 1000 feet of an access point.
Desktop Charger Height	75 mm (3.0 in.)
Desktop Charger Width	93 mm (3.7 in.)
Desktop Charger Depth	129 mm (5.1 in.)

Numerics

802.11b configuration menu **6-2**
802.11b configuration settings **6-10**
802.11b standard **1-5**

A

access points, See AP
active Cisco CallManager server **5-5**
active mode **3-17**
administrator password, changing **4-13, 4-16**
AP
  associating **2-3**
  Cisco Aironet Access Point **2-2**
  Cisco Aironet Access Points, supported **1-6**
  Cisco IOS version for wireless voice **3-4**
  description **2-2**
  overview **1-6**
  troubleshooting **9-3**
AP settings, identifying **9-10**
associated AP MAC address **6-4, 6-10**
associated AP SSID **6-5, 6-11**
audience, for this document **xiii**
authentication
  LEAP **4-23**
  open **4-23**
  selecting type **6-4, 6-6**
  shared key **4-23**
  wireless network setting **6-4**
auto-registration
  using **2-16**
  using with TAPS **2-18**
auxiliary VLAN, description **2-5**

B

barge **7-2**
BAT (Bulk Administration Tool) **2-19**
battery
  charging complete message **3-12**
  charging procedure **3-12**
  charging times with desktop charger **3-15**
  charging times with power supply **3-11**
  description **3-8**
  figure, installing in phone **3-10**
  installing and removing **3-8**
  power level indicator bar **3-12**
  types available **3-9**

battery caution 3-7
charging 3-7
damaged 3-7
disposal 3-8
replacement re 3-8
temperature 3-7
battery safety notices 3-6
battery warning
disposal 3-7
explosion 3-7

C

caller ID 7-3
call forward 7-2
call hold 7-2
call park 7-2
call pickup 7-3
call waiting 7-3
cautions
for battery pack 3-7
for charging battery pack 3-7
for damaged battery 3-7
for disposing of battery pack 3-8
for exposing battery pack to high temperatures 3-7
for replacing battery pack 3-8
for replacing power supply 3-8
translations 3-8
CDP
description 1-8
setting 4-26
time to live 4-26
transmit interval 4-26
CDP settings
hidden options 9-23
Cisco 7920 Configuration Utility, See configuration utility
Cisco CallManager
active server 5-5
adding phone to database of 2-13
adding users 7-6
configuration tasks 3-2
configuring DHCP settings 2-8
interacting with 2-8
network setting 5-5
restricting phone settings access 6-2
standby server 5-5
verifying settings 9-7
Cisco CallManager administration, adding phones using 2-18
Cisco Discovery Protocol, See CDP
Cisco IOS version, supporting wireless voice LAN 3-4
Cisco Wireless IP Phone 7920
specifications D-1
Cisco Wireless IP Phone 7920, See Wireless IP Phone 7920
conference 7-3

configuration, viewing current network settings 5-6
configuration file
CDP enable 4-31
CDP time to live 4-31
CDP transmit interval 4-31
configuring phone settings 4-31
creating new 9-9
DHCP client 4-30
DNS primary 4-30
DNS secondary 4-30
firmware name 4-31
firmware upgrade 4-31
format 4-29
gateway, primary 4-30
IP address 4-30
overview 2-12
parameter settings 4-30
RF network
available settings 4-30
data rate 4-30
SSID 4-30
transmit power level 4-30
ring tone file 4-31
ring tone index 4-31
ring tone name 4-31
SEPDefault.cnf 2-12
SEPxxxxxxxxxxxx.cnf.xml 2-12
subnet mask 4-30
TFTP primary 4-30
welcome message 4-31
XMLDefault.cnf.xml 2-12
configuration utility
administrator password 4-13
application windows overview 4-8
basic settings, troubleshooting 9-25
changing to another phone 4-20
connection status bar 4-10
current phone settings window 4-8
export function 4-9, 4-16
export settings 4-20
file access, troubleshooting 9-26
import function 4-9, 4-16
import settings 4-19
installing 4-4
installing USB driver 4-5
log history window 4-9
log in 4-12
log out 4-13
network connection 4-7
network security 4-18
network settings, troubleshooting 9-27
overview 4-1
parameter settings 4-21
password, default 4-12
phone lock password 4-18
phone preferences, using 4-18
phone settings 4-18
restore to factory defaults 4-14

RF network 4-18
security errors, troubleshooting 9-28
settings wizard, using 4-16
starting the configuration utility 4-15
system parameters 4-18
system requirements 4-2
tabs, phone preference window 4-20
task buttons 4-19
TCP connection, troubleshooting 9-25
troubleshooting 9-24
troubleshooting tips 9-24
uninstalling 4-5
uploading firmware 4-14
username, default 4-12
using 4-15
windows UI, troubleshooting 9-25
configuration utility menu
Connection 4-12
Edit 4-11
File 4-11
View 4-12
configuration values hidden 9-20
configuring
AP tasks 3-4
network features on phone 1-12
phone settings 4-20, 4-25 to 4-27
procedures, overview 1-14
RF network 4-22 to 4-23
startup network settings without DHCP 3-18
system parameters 4-21 to 4-22
user features 7-6
current configuration
viewing 8-1

D

data rate menu 9-22
data VLAN 2-5
desktop charger
description 3-13
figure 3-14
using 3-15
DHCP
client 4-21
configuring static settings 5-9
description 1-8
disabling 5-8
displaying settings 5-7
enable, network setting 5-4
enabling 5-8
gateway 2-8
interacting with 2-8
IP address 2-8
modifying settings 5-7
network setting 5-4
network settings without DHCP 3-18
priority for TFTP server 2-8
scope settings 2-8

subnet mask 2-8
troubleshooting 9-11
directory numbers, assigning manually 2-18
direct-sequence spread spectrum (DSSS) 1-5
displaying, network statistics 8-2
disposal warning 3-6
DNS server
assigning 5-12
network setting 5-5
settings for TFTP server 2-8
troubleshooting 9-12
verifying settings 9-7
documentation
additional xv
for users A-3
localized versions B-1
troubleshooting 9-29
downgrading firmware C-3
dynamic host configuration protocol, See DHCP

E

editing configuration values, guidelines 5-3
encryption
WEP key 4-24, 6-7
erase configuration, procedure 9-19
error
file access 9-26
file format 9-26
network 9-27
password invalid 9-28
security 9-28
TCP connection 9-25
TFTP 9-27
username unknown 9-28
windows UI operations 9-25
explosive gas warning 3-6
export
command 4-9
settings 4-16
task button 4-20

F

factory defaults, restoring 4-14
features
configuring with Cisco CallManager, overview 1-11
informing users about 1-12
file
access error 9-26
configuration utility, installed 4-4
creating new configuration 9-9
format error 9-26
format of configuration 4-29
firmware
checksum error 9-27
downgrading with 7920 Configuration Utility C-3

updating for Cisco CallManager Express C-3
updating on the phone C-3
updating with Cisco CallManager 3.3(3) and later C-1
uploading 4-15
uploading with configuration 4-26
uploading with configuration utility 4-14
verifying version 8-3

G

greeting message 4-25
group call pickup 7-3

H

hardware
verifying version of phone 8-4
hardware requirements, configuration utility 4-3
hidden options
accessing 9-20
CDP menu 9-23
data rate 9-22
power save mode 9-21
trace route 9-22
transmit power 9-23
hostname, network setting 5-5

I

import
command 4-9
settings 4-16
task button 4-19
installation
access point configuration 3-3
AP configuration tasks 3-4
Cisco CallManager configuration 3-2
network requirements 3-2
preparing 2-13
wireless network configuration 3-3
installation warning 3-6
installing
configuration utility 4-4
USB driver 4-5 to 4-7
Internet Protocol (IP) 1-9
IP address
assigning 5-9
network setting 5-4
troubleshooting 9-6
verifying 9-11

K

key
- # (pound) 1-3
- * (asterisk) 1-3
- answer/send 1-3
- arrow 1-3
- numbers 1-3
- power/end 1-3
- softkeys 1-3

L

LEAP
- authentication, description 2-7
- prompt mode, switching on and off 6-14
- wireless network setting 6-4

LEAP password
- length 6-13
- setting 6-13

LEAP username
- length 6-12
- setting 6-12

local configuration, erasing 9-19
loud ring tone, downloading 7-5
loudxxx.raw 7-5

M

MAC address
- determining 2-13
- viewing on phone 5-14

maximum length
- for LEAP password 4-24
- for LEAP user name 4-24

meet-me conference 7-3
menu
- data rate 9-22
- transmit power 9-23

message waiting 7-3
music-on-hold 7-3

N

native VLAN 2-5
network
- error 9-27
- security 4-23 to 4-25

network configuration menu
- displaying 5-2
- displaying 802.11b menu 6-2
- editing options 5-3
- hidden options 9-20
- unlocking options 9-20

network connectivity, verifying 9-5
network features, configuring overview 1-12

networking protocol
CDP 1-8
DHCP 1-8
IP 1-9
RTP 1-9
supported 1-7
TCP 1-9
TFTP 1-9
UDP 1-9
network outages, identifying 9-11
network requirements, for installation 3-2
network security 4-23 to 4-25
authentication type 4-23
LEAP authentication 4-23
open 4-23
shared key 4-23
network settings
accessing on phone 5-1
CallManager 5-5
configuring 5-1
DHCP enable 5-4
DHCP server 5-4
displaying values 5-4
hostname 5-5
IP address 5-4
primary DNS server 5-5
primary gateway 5-5
primary TFTP server 5-5
secondary DNS server 5-5
startup configuration without DHCP 3-18
subnet mask 5-4
viewing current configuration 5-6
network statistics, viewing 8-2
network type 6-5, 6-11

O

open authentication, description 2-6

P

password
changing administrator 4-13
forgotten phone lock 4-28
invalid error 9-28
LEAP 4-24
phone lock 4-18, 4-27
phone lock, resetting to default 4-28
phone audio, troubleshooting 9-13
phone lock password 4-27
phone menu
hidden options 9-20
phone mode
active 3-17
standby 3-18
phone operation for users A-1
phone preferences window, using 4-18

phone preference window 4-16
figure 4-19
task buttons 4-19
using tabs 4-20
phone resets, resolving problems 9-10
phone roaming, troubleshooting 9-14
phone settings 4-25 to 4-27
access restrictions 6-2
CDP 4-26
CDP time to live 4-26
CDP transmit interval 4-26
greeting message 4-25
ring list filename 4-26
ring tone 4-25
ring tone name 4-26
welcome message 4-25
wireless network configuration 6-1
phone type
Cisco 7920 2-14
prior to Cisco CallManager 3.3(3) SR1 2-16, 2-17
reregistering with 7920 phone type 2-15
plug-socket warning 3-6
powering on phone 3-16
power outage warning 3-6
power save mode 9-21
power supply
connecting 3-12
figure 3-11
figure, connected 3-13
for charging phone 3-11
power supply replacement caution 3-8
power supply warning 3-6
primary DNS server , network setting 5-5
primary gateway
assigning 5-11
network setting 5-5
primary TFTP server
assigning 5-11
network setting 5-5
provides 6-17

Q

QBSS, description 2-3
QoS Basis Service Set, See QBSS

R

real-time transport protocol, See RTP
received signal strength indicator, See RSSI
redial 7-4
registering
resolving problems with Cisco CallManager 9-4
reregistering with 7920 phone type 2-15

resetting
phone lock password to default 4-28
phones 9-12
phone to factory default settings 4-14
resolving startup problems 9-2 to 9-9
resolving voice quality problems 9-10 to 9-14
RF network
configuring 4-22 to 4-23
data rate 4-22
SSID 4-22
transmit power 4-22
RF network settings 4-22
ringlist.xml 7-4
ring list filename 4-26
ring tone
adjusting volume 7-6
creating custom 7-4
default in phone 4-25
downloading loud 7-5
loud 7-5
name 4-26
ring list filename 4-26
ring volume, adjusting 7-6
roaming
description 2-4
mid-call 2-4
pre-call 2-4
resolving problems 9-10
RSSI, description 2-3
RTP description 1-9

S

secondary DNS server, network setting 5-5
security
LEAP authentication 2-7
open authentication 2-6
shared key authentication 2-6
WEP authentication 2-7
WLAN overview 1-7
security error 9-28
SEPDefault.cnf configuration file 2-12
SEPxxxxxxxxxxxx.cnf.xml configuration file 2-12
service set identifier, See SSID
settings wizard, using 4-16
shared key authentication, description 2-6
shared lines 7-3
short circuit protection warning 3-6
shortcuts
access special characters 1-3
ring and vibrate mode 1-3
speed dial 1-3
switching key lock on and off 1-3
site survey
performing 6-15
verification steps 6-15

site survey utility
  accessing with phone menu 6-16
  display values 6-17
software requirements, configuration utility 4-3
specifications
  operating environment D-1
  physical D-1
SSID
  configuring 6-5
  description 6-4
  wireless network setting 6-4
standby Cisco CallManager server 5-5
standby mode 3-18
startup
  configuration utility 4-15
  failure 9-2
  resolving problems with 9-2
startup process
  contacting Cisco CallManager 2-11
  DHCP disabled 2-9
  steps and description 2-9
statistics, network 8-2
status information 8-1
subnet mask
  assigning 5-10
  network setting 5-4
Survivable Remote Site Telephony (SRST) router 5-5
symptom
  LCD screen does not display 9-2
  phone does not associate with AP 9-3
  phone does not register 9-4
  phone does not start 9-2
  phone has audio problems 9-13
  phone has roaming problems 9-14
  phone resets 9-10
system log server 9-18
system parameters 4-21 to 4-22
  DNS server 4-22
  IP address 4-22
  primary gateway 4-22
  setting 4-21
  subnet mask 4-22
  TFTP server 4-22

T

TAPS (Tool for Auto-Registered Phones Support) 2-18
task button
  export 4-20
  import 4-19
TCP
  description 1-9
  error with IP address 9-26
telephony features
  barge 7-2
  caller ID 7-3

call forward 7-2
call hold 7-2
call park 7-2
call pickup 7-3
call waiting 7-3
conference 7-3
configuration references 7-2
descriptions 7-2
group call pickup 7-3
meet-me conference 7-3
message waiting 7-3
music-on-hold 7-3
redial 7-4
shared lines 7-3
supported 7-2
transfer 7-4
voice messaging system 7-4
TFTP
default port 9-26
description 1-9
error 9-27
phone setting 5-5
troubleshooting 9-5
TFTP server
assigning to phone 5-13
options 5-13
Trace 9-22
trace route
option on phone 9-18
performing 9-22
transfer 7-4
transmission control protocol, See TCP
transmit power menu 9-23
trivial file transfer protocol, See TFTP
troubleshooting
accessing hidden options 9-20
AP settings 9-3, 9-10
Cisco CallManager settings 9-7
configuration utility 9-24
DHCP 9-11
DNS 9-12
DNS settings 9-7
general information 9-15
IP addressing and routing 9-6
IP address settings 9-11
logging information 9-18
more information 9-29
network connectivity 9-5
network outages 9-11
phones resetting 9-12
services on Cisco CallManager 9-8
TFTP settings 9-5
VLAN configuration 9-11
Wireless IP Phone 7920 9-1

U

UDP description 1-9
uploading firmware 4-15, 4-26
user datagram protocol, See UDP
users
  accessing voice messages A-4
  adding to Cisco CallManager 7-6
  documentation for A-2
  international, supporting B-1
  required information A-1
  wireless IP phone information A-1

V

verifying
  Cisco CallManager settings 9-7
  firmware version 8-3
  hardware version 8-4
  network settings 9-5
VLAN
  assigning separate SSIDs 2-5
  auxiliary, for voice traffic 2-5
  native, for data traffic 2-5
  verifying 9-11
voice messaging system 7-4
voice quality, resolving problems 9-10
voice VLAN 2-5

W

warnings
  definition 3-5
  for battery disposal 3-7
  for battery explosion 3-7
  for disposal 3-6
  for explosive gas 3-6
  for installation 3-6
  for plug socket 3-6
  for power supply 3-6
  for power outages 3-6
  for short circuit protection 3-6
  translations 3-8
welcome message 4-25
WEP authentication, description 2-7
WEP key 4-24
  configuring 6-8
  setting up encryption 6-7
  wireless network setting 6-4
WiFi (802.11b) 1-5
Wired Equivalent Privacy key, See WEP key
wireless IP phone, See Wireless IP Phone 7920
Wireless IP Phone 7920
  adding manually to Cisco CallManager 2-18
  adding to Cisco CallManager 2-13
  adding using auto-registration 2-16
  adding using auto-registration with TAPS 2-18
  adding using BAT 2-19

battery 3-8
configuration file 2-12
configuration overview 1-14
configuration requirements 1-13
feature overview 1-10
figure 1-2
installation overview 1-13
installation requirements 1-13
keys 1-2
overview 1-1
phone modes, active and standby 3-17
phone type for Cisco CallManager database 2-14
powering on 3-16
registering 2-13
registering with Cisco CallManager 2-16, 2-18, 2-19
registering with Cisco CallManager prior to 3.3(3) SR1 2-17
supported networking protocols 1-7
troubleshooting 9-1
troubleshooting tips 9-15
wireless local area network, See WLAN
wireless network
optimal voice environment 6-18
overview 1-4
wireless network settings
802.11b configuration 6-10
accessing on phone 6-2
activating 6-9
associated AP MAC address 6-4
associated AP SSID 6-5
authentication 6-4
authentication type 6-6
configuring 6-1
displaying configuration values 6-4
LEAP 6-4
network type 6-5
SSID 6-4
WEP key 6-4
WLAN
components 2-1
configuring network settings 6-1
optimal voice environment 6-18
overview 1-4
roaming 2-4
security 1-7
security mechanisms 2-6
voice quality 2-5

X

XMLDefault.cnf.xml configuration file 2-12